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TRANSPORTATION A FRAMEWORK FOR IMPROVED ACCESS

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City of Boston
Raymond L. Flynn. *Mayor*

Transportation Department
Richard Dimino, *Commissioner*

FEBRUARY 1986

CITY OF BOSTON · MASSACHUSETTS

OFFICE OF THE MAYOR
RAYMOND L. FLYNN

A hundred years ago, Boston was a city on the move. In 1886, nearly 300,000 residents travelled along a street network that dated from Boston's beginnings in 1630. Some say that the streets of that time most closely resembled paths made by wandering cows. But these cow paths could not meet the needs of a growing city for long. Between 1870 and 1900, the city doubled both in land area and population. New roads and new forms of transportation soon emerged to keep pace with this growth, culminating in the opening of Boston's subway system in 1897.

Today, in 1986 many urban areas throughout the Commonwealth of Massachusetts are growing. Boston has become the financial center of New England, a job provider for over half a million people, and a tourist attraction that draws 5 million visitors a year. In addition, for the first time in 30 years, the City's residential population is on the upswing with a total population of 620,892 compared to 562,994 in 1980.

As the state, its metropolitan region, and Boston grew demands were and continue to be, placed on the interstate and public transportation systems. Public transportation has not been able to fully respond to the growing access demands of Boston and the region. As a result, the automobile continues to be the preferred choice. More and more people are using their cars to get in and around Boston and the region, causing congestion and significant wear on the system.

It is obvious that the current transportation problems facing the state and the city need to be addressed. Improving access in and around Boston and the region is vital to the area's overall quality of life and economy.

This document entitled TRANSPORTATION: A Framework for Improved Access, seeks to address the transportation issues facing Boston and the region. It calls for responsible growth and a balanced transportation system, one that provides regional mobility through use of public transportation, highways, and alternative modes. It identifies elements of the current transportation system that need improvements, and it identifies new directions for transportation planning. It is my hope that this document will be used as a helpful step toward initiating leadership, stimulating collaboration, and creating transportation partnerships between the state, city, business, academic, and residential communities to achieve our goals. I am hopeful that the result will enhance our overall transportation system.

Sincerely,

Raymond L. Flynn

Raymond L. Flynn, Mayor
City of Boston

TRANSPORTATION

A FRAMEWORK FOR IMPROVED ACCESS

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EXECUTIVE SUMMARY

Downtown Boston, with its concentration of government, business and public service institutions, is the center of activity for the metropolitan area and New England. Its transportation needs are intense and complex, posing the fundamental dilemma of the competition between the spatial needs of various types of transportation modes and facilities, and the activities they serve.

Problems of downtown access are major concerns as they affect the economic and social climate which benefits all Boston residents. In order to promote balanced growth the city must strike a balance between land use and transportation needs. The city must also maintain a balance between the diverse forms of private and public transportation. Good access to Boston is directly related to a well coordinated metropolitan regional transportation system of arterial roadways, including the Interstate system and public transportation. It is essential that the city and state work closely to improve roadways and public transportation with the mutual goal of achieving such balanced growth.

TRANSPORTATION - A Framework for Improved Access is a document prepared by the Boston Transportation Department cooperatively with the Boston Redevelopment Authority. Its purposes are to generate discussion and guidance in decision-making, and to meet the transportation challenges of the city and its region.

It addresses the following areas of concern:

Public Transportation

The backbone of Boston's transportation infrastructure is its extensive and multi-modal transit network. Methods of commuter travel vary for the metropolitan area, the city as a whole, and the downtown area, but it is clear that a major share of Boston's transportation future lies in sustaining and improving its public transportation system. The city's goal is to increase the use of public transportation by improving the overall quality of the system.

Included among Public Transportation initiatives are:

- o Development of inner-city transit
  - Link Red and Blue Lines between Charles and Bowdoin Streets
  - A new Red Line link between South Station and Fort Point Channel
  - A new Blue Line Connector to the Airport
  - Circumferential transit initiatives that link neighborhoods directly

- o Expansion of regional transportation
  - Reactivate the South Shore Commuter Line

- o Increasing capacity
  - Add more cars on existing lines
  - Lengthen platforms
  - Institute new service, including busses

- o Improvement of quality of service
  - Complete South Station multi-modal transportation center
  - Improve passenger access to rail, water and mass transit
  - Continue to increase reliability, security and cleanliness on mass transit to encourage use

Transportation Systems Management

Transportation Systems Management is a process of implementing short-term and low cost improvements designed to more effectively manage traffic flows. The program focuses on obtaining the best level of services from existing facilities. Many of the improvements are very simple applications of paint lines or signs, and some are more complex combinations of design, regulation and enforcement. The goal of Transportation Systems Management is to use existing transportation facilities more effectively.

Major initiatives include the following:

- o Traffic Relief Program
  - Establishing enforcement efforts in "hot spots" to improve traffic flow

- o Computerization of traffic signal system
  - Improving timing on Boston's traffic signals at 250 downtown area intersections

- o Mitigation of construction related traffic

- o Neighborhood transportation planning
  - Defining 5-10 problem spots within a community and through a community input process resolving issues. Plans have been initiated in Charlestown, East Boston, South End, North End, Uphams Corner, South Boston, Beacon Hill, Fields Corner, and Back Bay

Highways, Arterials and Bridges

The surface street system is basic to the transportation system, serving literally millions of vehicle trips per year. Boston's goal for its street system is to upgrade major roads, bridges and intersections to improve traffic flow and increase safety, and build new roadways as appropriate.

Major initiatives include:

- o Taking immediate steps to reconstruct major bridges, such as New Northern Avenue Bridge and roadway, Congress and Summer Street Bridges, and repair West 4th, 5th and 6th Street bridges.

- o Designing and constructing Seaport Access roads and South Boston By-Pass.

- o Modernizing major arterials such as Huntington Avenue, Blue Hill Avenue and Columbia Road, and construct a Herald Street connector. Reconstructing Washington Street when elevated MBTA structure is removed.

- o Monitoring major roadway construction projects such as Central Artery North and the proposed Central Artery Depression/Third Harbor Tunnel
  - Consideration must be given to the impacts these projects will have on the city and its neighborhoods before they can be supported

- o Redesigning problematic intersections to improve traffic flow, including:
  - Leverett Circle
  - Charles Circle
  - Dewey Square
  - Cambridge/Bowdoin

Parking - Improved Availability

A limited supply of on and off-street parking spaces and a growing demand have combined to create a parking shortage. The city seeks to balance this growing demand with concerns about traffic congestion and air quality. Policy will address parking requirements in residential and commercial areas, and the different needs of residents, commuters, shoppers, and other visitors. The city's goal is to increase parking supply and make better use of existing resources without adversely affecting traffic congestion and air quality.

Initiatives proposed to achieve the goal include:

- o Increasing total parking supply by 5-10,000 spaces at peripheral locations
  - North Station and South Station
  - Conduct air quality analysis of and modify parking freeze if appropriate
  - Evaluate Restricted Parking District

- o Improving the use of existing parking spaces
  - Setting aside a specific number of spaces that are available only after 10:00 A.M. to increase short-term midday parking
  - Discouraging all-day parking by considering the reduction of supply and possibly adjusting rate structure
  - Encouraging developers and businesses to offer incentives for use of mass transit and ridesharing by employees
  - Increase meter locations
  - Review the potential to redesignate employee spaces as mid-day parking, not open until 10:00 a.m. Monday-Friday

- o Improving residential parking availability
  - Expanding the residential parking program
  - Evaluating establishment of off-street resident parking facilities

Alternative Modes

In a large, diverse city such as Boston, it is imperative that attention be given to a versatile transportation system. The development of alternative

modes of travel that reduce the number of motor vehicles in use must be fully explored. Boston's goal is to increase the availability and use of diverse transportation modes.

Initiatives include:

- o Water transportation
  - Expansion of commuter service from South Shore to additional locations
  - Expansion of commuter service from various locations within the city

- o Pedestrian Walkways
  - Development of the Congress Street pedestrian overpass
  - Identifying other locations for pedestrian walkways, such as Dewey Square

- o Taxi cabs
  - Establishment of better communication process between taxi industry, Transportation Department, and Police Department
  - Encourage and support multiple-load programs

- o Ridesharing
  - Encouraging informal carpooling
  - Expansion of formalized programs such as CARAVAN
  - Expansion of subscription bus service

- o Bicycles
  - Defining and identifying bicycle routes that will provide a safe ride with minimum traffic disruption
  - Provision of adequate bicycle storage facilities

- o Helicopter
  - Completion of a study, now underway, to determine locations for helicopter landing facilities within the City of Boston

- o Special Needs
  - Improvement of access to existing public transit facilities
  - Expansion of special needs transportation programs

Transportation Impact Assessment

Intelligent planning allows the opportunity for proper "dimensioning" of development and transportation facilities in order to avoid congestion problems. Effective land use decisions relating to site development must co-exist with efficient transportation policies and mitigation procedures. The city's goal is to encourage responsible and balanced growth

In order for this to happen the following actions must be taken:

- o Amendment of zoning code to require transportation access plans for certain projects and abutting residential neighborhoods impacted.

- o Encouraging developers to identify traffic problems and appropriate mitigation measures
  - Traffic management plans
  - Parking management plans
  - Construction management plans
  - Comprehensive traffic planning by the developer will be monitored by city's Transportation Department

Legislation

State and federal legislative limitations affect the ability of the city to address the transportation access problems outlined in this document. Authority to implement certain strategies and limitations by setting unrealistic limits to regulatory powers must be remedied at the state level. Most issues at the Federal level focus on funding cut-backs. Boston's legislative goal is to support transportation funding programs and pursue legislative changes to improve city's regulating power.

Initiatives include:

- o Amendment of state limits on fines for traffic violations and on towing regulations.

- o Supporting congressional appropriations for highway and transit funding

Government and Community Involvement

The successful implementation of Boston's transportation policy is directly dependent on how responsive it is to the people it is intended to serve. That is why the public will be included in the process of transportation programming and policy development. Boston's goal is to foster participatory transportation planning and improve intergovernmental coordination.

This will be accomplished by the following initiatives:

- o Establishing Transportation Advisory Committee
  - To be made up of civic, business, commercial, academic and public agency representatives.

- o Sponsoring government and public forums to allow broad participation in the development of transportation planning.

INTRODUCTION

Boston, because of its rambling street pattern in the downtown area, is often considered a city whose basic plan was established by a wandering cow. From Boston's founding in 1630 to 1870, vast new areas of land were created through landfilling carried out by private companies. From 1870 to early 1900, tremendous growth and expansion took place -- the city doubled its land area and population, and in response to the needs for improved public transportation systems, began the construction of a subway system. From 1900 to 1940, Boston began to experience the increasing role of both the federal and state governments in determining city policies.

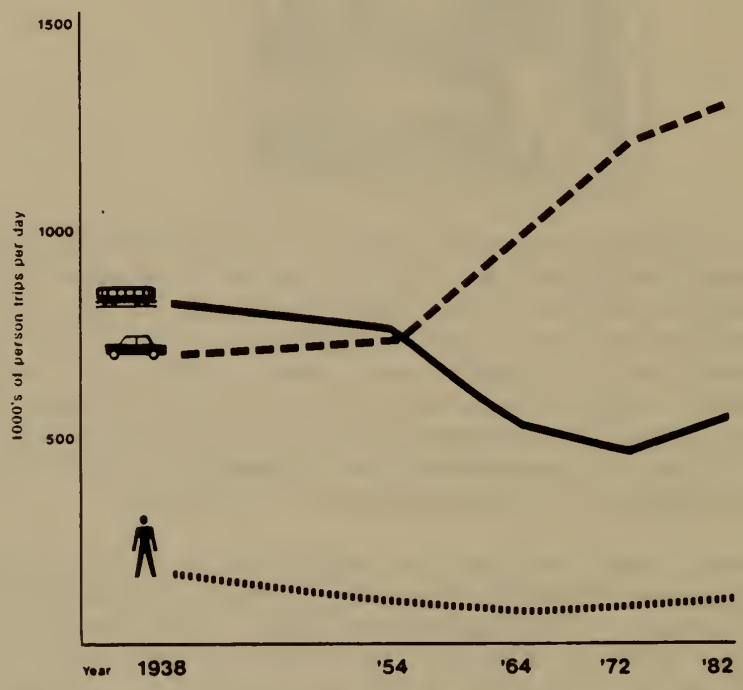
The late 1950s and early 1960s marked the beginning of new directions for Boston. During this period federally funded renewal programs, the Prudential Center, Government Center, a 10-year Master Plan, and massive investment to update Boston's public facilities, streets and highways were all initiated. Increasing congestion led to proposals for massive highway building plans, including a new Crosstown Expressway, Southwest Expressway and other major highway proposals disruptive to various communities and questionable in terms of achieving a balance between highway and public transportation improvements. In 1972, the Commonwealth acted to stop all new highway construction programs in the city of Boston, a decision supported by city policy.

These measures have not encouraged ridership on public transportation as was expected. While Boston has seen a ten percent increase in vehicles entering downtown in the period since 1972, public transit ridership has increased at a significantly lower rate. Figure 1 illustrates the growing popularity of automobile travel in Central Boston in recent years, as compared to transit usage.

Today, Downtown Boston is the largest central business district in New England. Within its relatively small area it supports large centers of government, finance, commerce, and retail as well as residential neighborhoods. On an average weekday in 1982, over two million persons using all modes of transportation were recorded entering the 2.2 square mile Downtown peninsula. (See Map 1.) In handling the transportation requirements of these people, the various systems, modes, and components have one thing in common -- the major elements are near or at saturation during the lengthening peak travel hours.

Figure 1

Daily Trips into and through Boston Proper



Transit and roadway congestion, coupled with parking shortages, are most obvious in Boston's downtown area. However, it is critical to recognize that in the broadest sense Boston's transportation problems are regional ones affecting not only the city but surrounding communities as well. Regional solutions to the area's transportation difficulties are mandatory.

Continued improvements to the public transportation system are critical to correcting transit problems. Public transportation accounts for about ten percent of all trips (five times the national average) within the metropolitan area and over forty percent of all trips to downtown Boston are by public transit. It is obvious that the role performed by the region's public transportation system is of utmost importance.

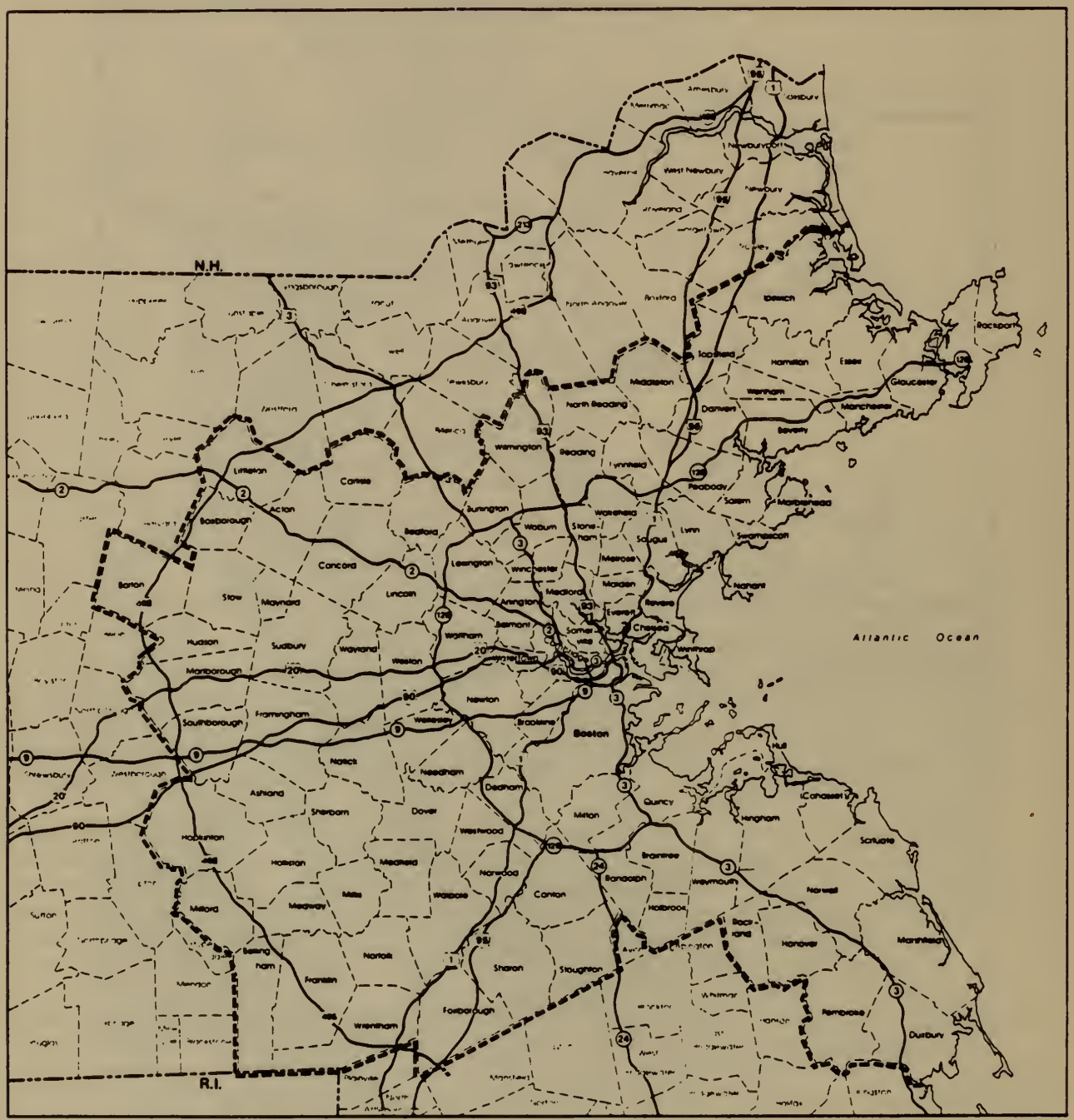
Coupled with the public transit system are the region's interstate highways, illustrated on Map 2, all of which are currently over design capacity. Improvements to critical segments of the interstate system such as the Central Artery/Third Harbor Crossing are essential in achieving overall improvements to the area's transportation system, yet these improvements must be balanced with critical concerns for the welfare of Boston residents.

Compounding current existing transportation problems are the continued growth of Logan Airport and projected new development, not only in downtown Boston, but in surrounding communities.

Cordon Count Boundary for Boston Proper, 1982

Map 2

Highway Network within Metropolitan Boston Region



The potential for increased congestion occurs as new development is built and more is pending or planned. Added to the pressures on downtown are the increases in through traffic caused by the proximity of downtown to the strategic intersections of the major north-south (I-93/Central Artery) and east-west (I-90/Massachusetts Turnpike) highways of Massachusetts through which crosstown trips must pass. Existing and future development in areas adjacent to downtown, such as Logan Airport, the Fort Point Channel area and Cambridge, also enlarge the scale of the problem.

While it must be recognized that Boston is a growing city, as are many of the surrounding communities, this growth must be balanced with new and improved transportation systems. New development controls and policies which are balanced with improved transportation systems must be devised, evaluated and implemented.

The document which follows has been prepared through a cooperative effort of the Boston Transportation Department and the Boston Redevelopment Authority. It focuses on problems and issues associated with Boston's transportation challenges. More importantly, it reviews policies and programs which are designed to address these problems.

Boston's transportation challenges must be resolved on a regional basis. Sustaining and improving the region's public transportation system is essential given the heavy transit dependence in Boston and the region. Unfortunately, several massive public transportation improvements presently underway have yet to come to fruition, and will not for several years. Quality of service, capacity, inner-city connections, and regional systems are issues critical to the continued and expanded role of public transit serving Boston and surrounding communities. This document outlines city policies and plans that address the critical question of how do we make the best use of existing transportation facilities. Existing resources can be better managed. Short-term and low-cost improvements can be implemented to more effectively operate traffic flows on existing transportation facilities.

PUBLIC TRANSPORTATION

An extensive and multi-modal transit network is the backbone of Boston's transportation infrastructure. It creates the vibrant urban life of Boston's commercial, cultural and residential quarters. Table 1 shows the modal split between transit, autos and pedestrians. For the entire Boston metropolitan area, including the Route 128 and 495 suburbs, about ten percent of travel is by public transportation. This compares to a national average of about 2½ percent. Within the city of Boston, however, the transit share rises to twenty percent. It is estimated that forty percent of all travel to Boston Proper on an average day is by transit. However, during morning and evening peak-hours two out of three travelers depend upon transit services.

Table 1

Modal Shares for Different Transportation Markets

Estimated 1985

	Mode			
Market	Auto	Transit	Walking and Other	Total
U. S. Urban	92%	3%	5%	100%
Boston Metropolitan Area	85%	10%	5%	100%
City of Boston	70%	20%	10%	100%
Central Boston	50%	40%	10%	100%
Downtown Peak Hour	25%	65%	10%	100%

For Boston to sustain continued growth without transportation paralysis, it must devote even greater resources to its transit services. Transit must absorb new demand and attract auto users away from their cars. Funds must be made available to develop world class transit standards on and below Boston's streets.

Outline of the System: Problems and Opportunities

In all; twenty rail corridors radiate from the Shawmut peninsula on which Boston Proper is located. Thirteen of the rail corridors serve Boston neighborhoods in varying degrees, as shown in Table 2. The Blue Line is closely identified with East Boston, and the Red Line with Dorchester, South Boston and Mattapan. The Southwest Corridor's Orange Line serving the South End, Roxbury and Jamaica Plain will realize dramatic improvements within the next few years.

Four branches of the Green Line serve the Back Bay, the Fenway-Kenmore area, Allston-Brighton, Mission Hill and Jamaica Plain, as well as Brookline and Newton. Many Charlestown residents use the Orange Line. Commuter rail service reaches Roslindale and Hyde Park and it will be restored soon to West Roxbury. The future of the Midlands railway and its potential as a service and redevelopment corridor through South Boston, Roxbury, Dorchester and Mattapan needs to be studied.

The rail network is increasingly supplemented by a proliferation of MBTA express routes and private bus operations, particularly from the South Shore and the Turnpike Corridor.

Major Initiatives

Many problems in MBTA service result from the lengthy construction and start-up requirements of urban transit projects. Radial extensions to the suburbs have already been realized. The benefits of other recent MBTA initiatives have yet to come on-line.

Map 3

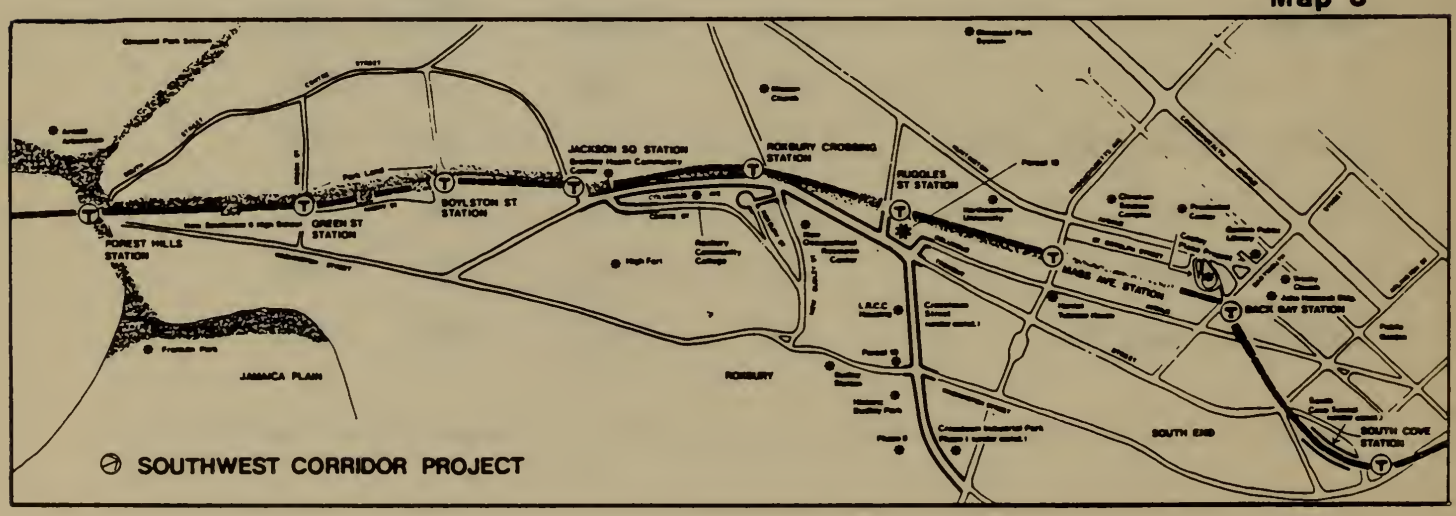


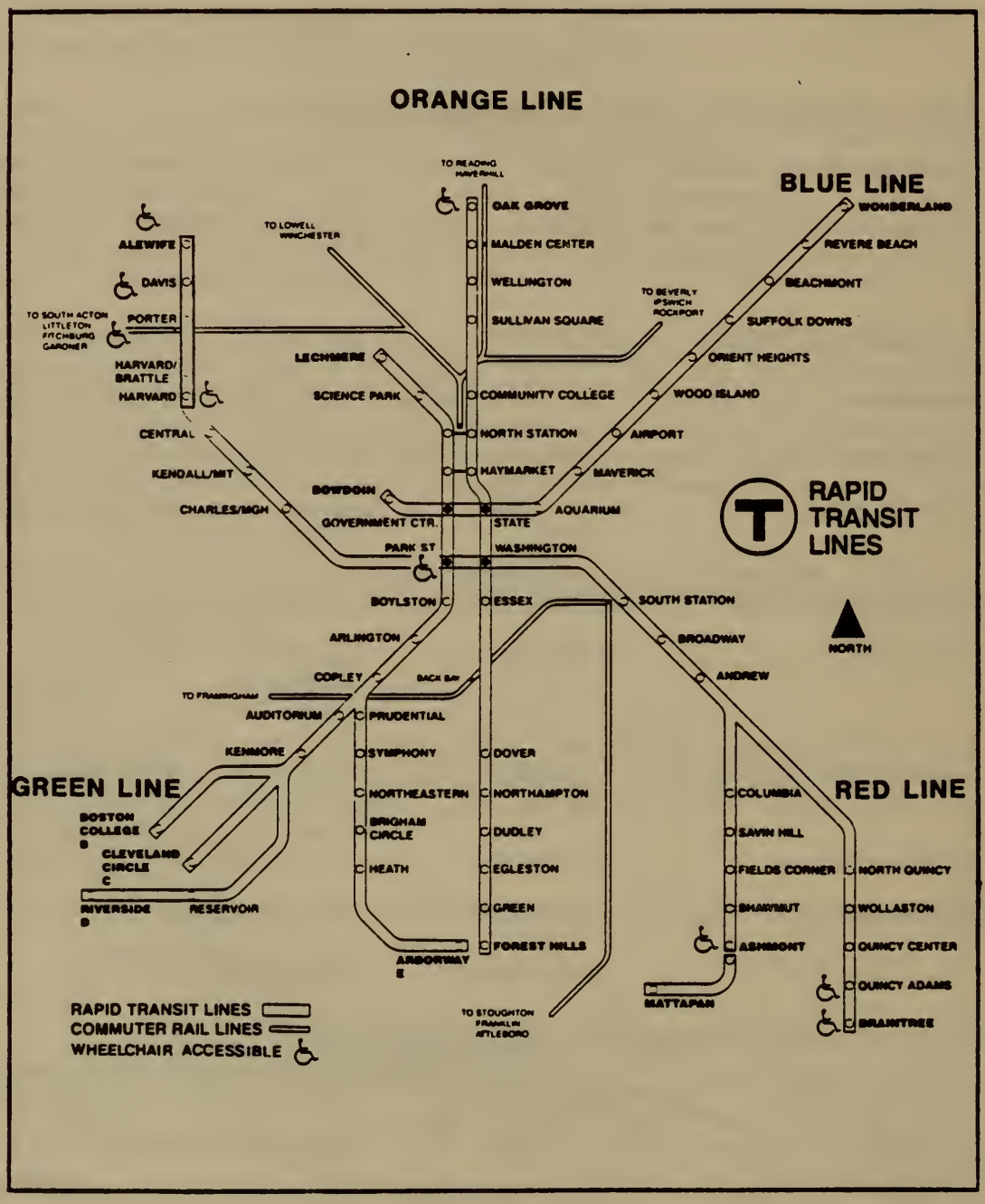
Table 2

Inventory of Boston's Rail Transit Infrastructure

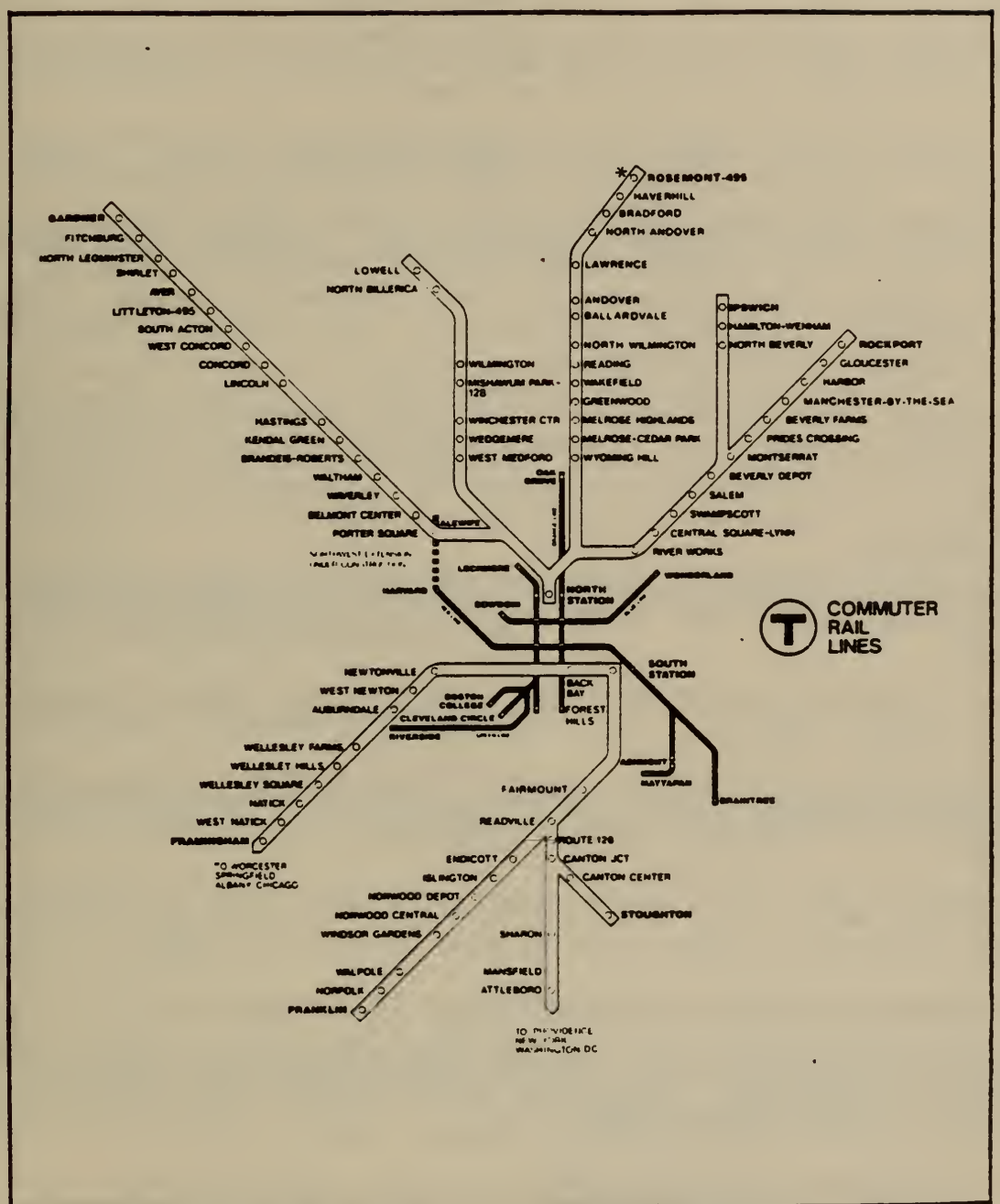
	Corridor	Mode	Neighborhoods Served
PROVIDING SERVICE TO BOSTON NEIGHBORHOODS			
1.	Commonwealth Avenue	LRV	Brighton, Fenway-Kenmore
2.	Beacon Street	LRV	Fenway-Kenmore
3.	Riverside	LRV	Fenway-Kenmore
4.	Huntington Avenue	LRV	Mission Hill, Jamaica Plain
5.	Needham	commuter (1987)	Roslindale, West Roxbury
6.	Franklin	commuter (1987)	Roslindale/Hyde Park
7.	Forest Hills	rapid rail (1987)	South End, Roxbury, Jamaica Plain, Roslindale
8.	Washington Street	possible/LRV	South End, Roxbury
9.	Midlands	commuter	Dorchester, Roxbury, Mattapan, Hyde Park
10.	Ashmont-Mattapan	LRV/rapid rail	Dorchester, Mattapan, S. Boston
11.	Braintree	rapid rail	N. Dorchester, S. Boston
12.	Wonderland	rapid rail	East Boston
13.	Oak Grove	rapid rail	Charlestown
Providing Service to Other Metro Communities			
14.	North Shore	commuter rail	Lynn, Beverly, etc.
15.	Reading	commuter rail	Medford, Stoneham, etc.
16.	Woburn-Fellsway	commuter rail	Somerville, Winchester, etc.
17.	Acton	commuter rail	Belmont, Waltham, etc.
18.	Framingham	commuter rail	Newton, Natick, etc.
19.	Lechmere	LRV	Cambridge, Somerville
20.	Alewife	rapid rail	Cambridge, Somerville, etc.

Map 4

MBTA Rapid Transit Network, 1986



B&M/MBTA Commuter Rail Network, 1986



The Southwest Corridor joining the relocated Orange Line in neat efficiency with Amtrak and commuter rail service will not be ready until 1987. The dramatic transit access that only North and South Station enjoyed -- the confluence of commuter rail and the MBTA grid -- will be available along the Southwest Corridor at the Back Bay station. It will serve Boston's burgeoning mid-town section, including the Hancock Tower, Copley Place and the New England Life complex, as well as historic Copley Square and the Back Bay. As rapid transit, it will provide easier and quicker service between the Back Bay and North Station area than the Green Line's LRVs.

A fourth transit/commuter node will be created at Ruggles Street. Here at Northeastern University's backyard and Roxbury Community College's frontyard will rise a model transit-oriented complex. In the long-run a ring transit line may better link Boston's neighborhoods, institutions, and academic resources in an arc from Columbia Point to Boston University, perhaps to Cambridge, probably intersecting the Southwest Corridor at Ruggles. This is part of a comprehensive study of Circumferential Transit which will soon be undertaken by the city and the MBTA.

These and other major transit initiatives should be explored and planned by the city and the Commonwealth. The most significant of these are described below.

Quality of Service

The attractiveness of public transportation depends on its reliability, cleanliness, safety and ease of use. Many programs can be used to introduce improvements:

- o MBTA stations can be improved architecturally, with better, protected walkways into buildings.

- o Operating reliability can be increased by a well developed and on-going preventive-maintenance program and improved staff training and performance.

- o Scheduling should be reviewed to ensure that city residents are allotted their due share of service, such as along the Red Line South.

- o Cleanliness and security at stations should be increased.

- o Success of the monthly pass program should be expanded through greater employer participation. New day or weekly passes for tourists and commuters should be developed.

Capacity of Existing Lines and Routes

The need to increase passenger-carrying capacity on existing MBTA lines will require several initiatives. Some are already underway:

- o Longer platforms at Red and Orange Lines, allowing use of six-car trains.

- o The new Orange Line will provide additional and faster service between the Back Bay and downtown Boston.

- o More trains are needed to increase capacity, especially on commuter rail services and on the Green Line.

- o Need for increased capacity on the Blue Line, perhaps through platform lengthenings, should be explored.

- o Establishing of more express buses and distributor routes should be investigated.

- o Implementation of the South Station Transportation Complex as an enhanced multi-modal model should be expedited.

- o Improved operating reliability and schedules should be considered as a mechanism that can be used to increase capacity.

Inner City Connections

Several projects to improve transit connections within Central Boston, including Logan Airport, are being studied. Foremost among these are:

- o Assessing needs for Circumferential Transit service at varying distances from the core, including connections to the Allston-Brighton, Dudley-Ruggles, Fort Point Channel and Columbia Point areas.

- o Filling the transit service void with one of several alternatives in the South End and Roxbury when the elevated Washington Street Orange Line is dismantled in 1987 or 1988.

- o Preserving and improving service on the Midlands railroad to Roxbury, Dorchester, Mattapan and Hyde Park.

- o Enhancement of transit access to Logan and providing good transit service to the growing Fort Point Channel area. Several possibilities using rail or people mover transit are being studied. See Maps 6, 7, 8 and 8a.

- o Establishing distributional bus route network within Boston Proper.

Regional Transport

Much of the MBTA mass transit system serves the needs of those who live outside the city. It removes a significant amount of automobile traffic from the city streets and limited parking facilities. Boston recognizes the importance of those transit services. The city seeks to foster sound regional context for all forms of public transportation and supports:

- o Full transit funding at state and federal levels is essential.

- o Use of priority bus lanes, transit malls, bus shelters and terminals on its streets.

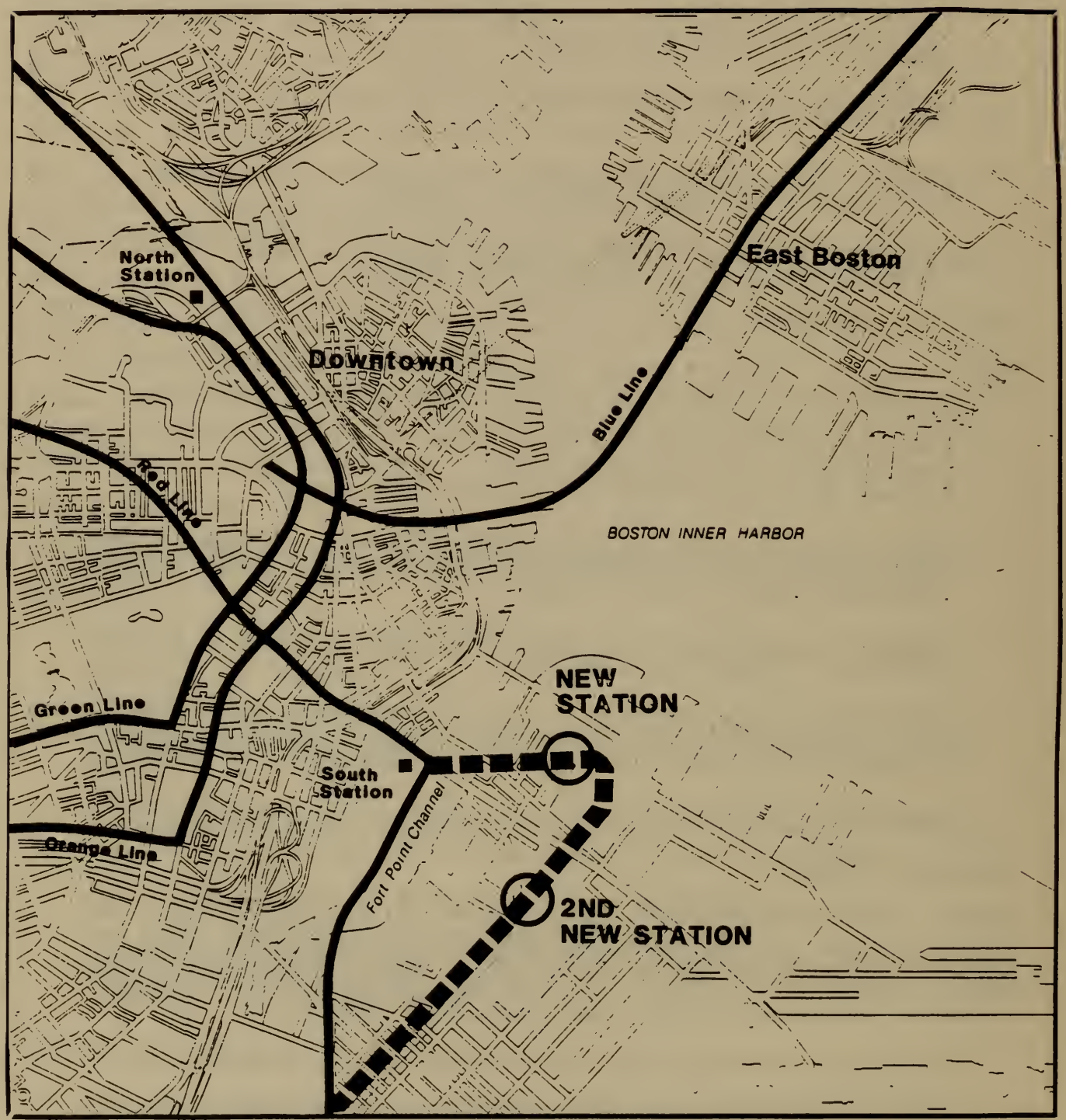
- o The South Station Transportation Complex as an improved facility for regional and express buses.

- o Reinstatement of commuter rail service to the South Shore.

- o Consideration of extending the Blue Line to Lynn.

Map 6

Fort Point Channel Red Line Loop Alternative

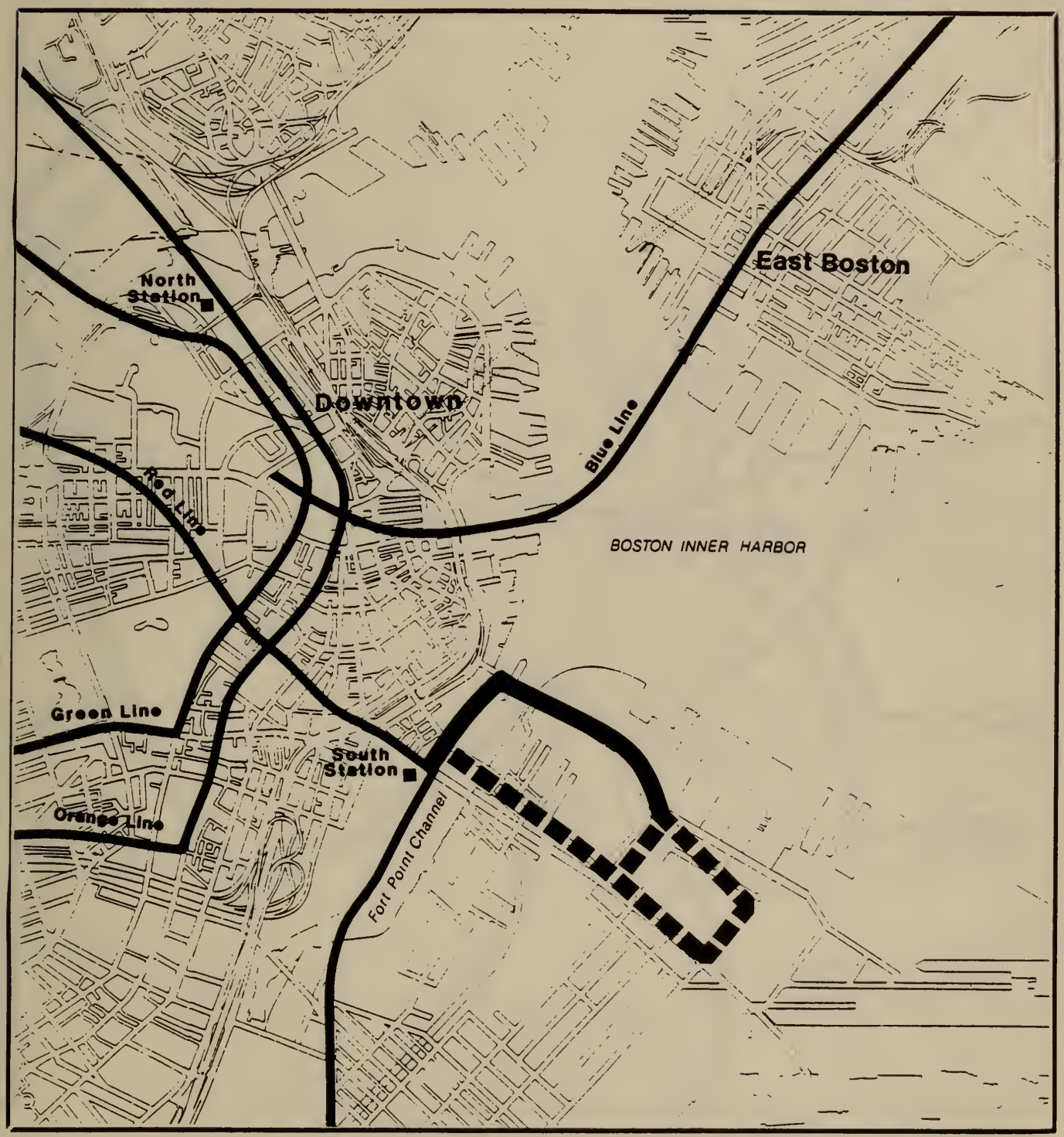


■■■ Proposed Red Line Loop
——— Existing MBTA Transit Lines

- 1 or 2 or 3 new stations
- Delays to Red Line users
- Rail rapid transit
- $100-200 million

Map 7

Fort Point Channel Shuttle/Loop Alternative

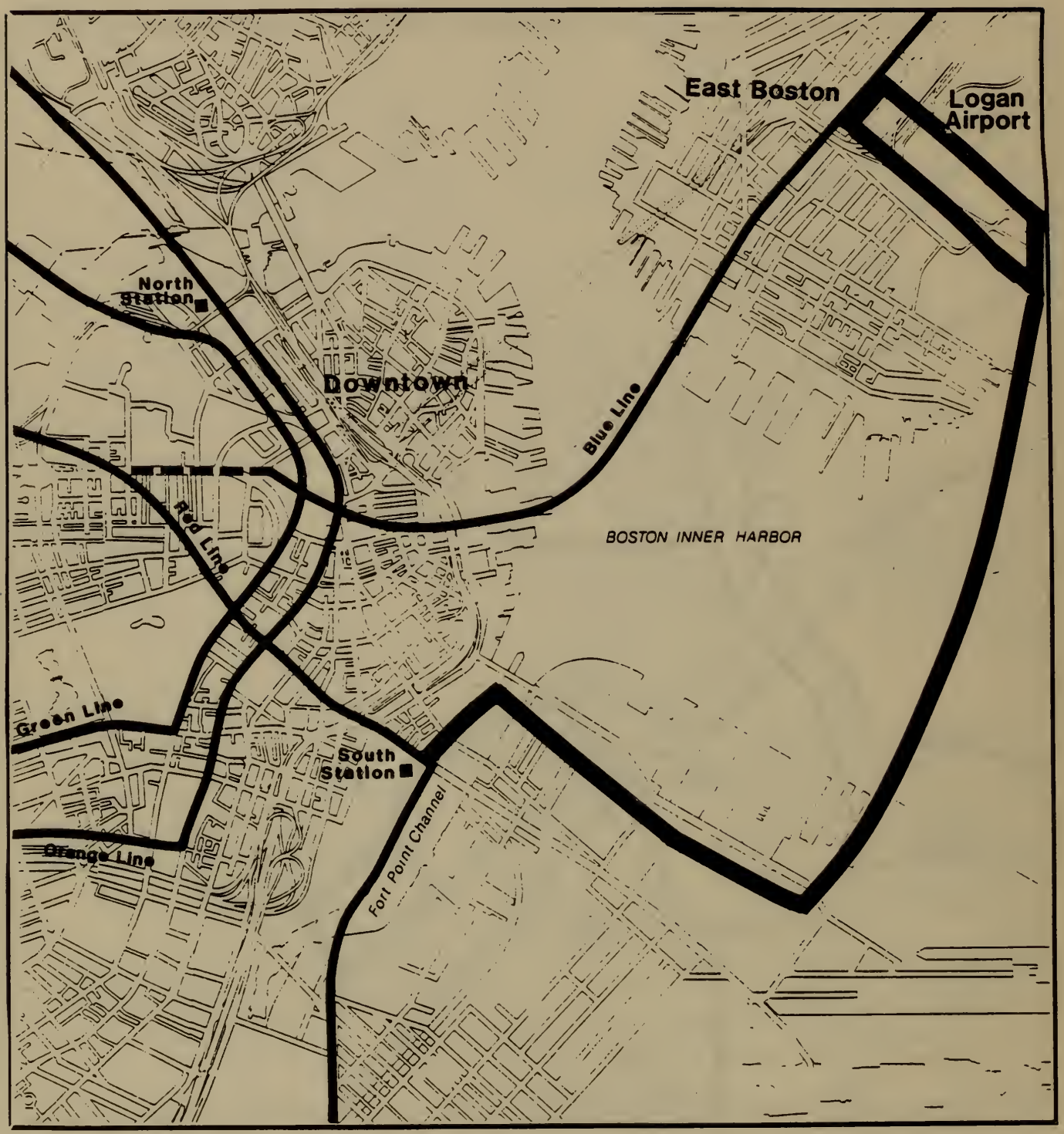


Initial Shuttle / Loop
Loop Extension
Existing MBTA Transit Lines

- Simple 0.9 mile shuttle can be built quickly, privately ($15-30 million)
- 2.2-mile loop can be extended in stages, one-way or two-way
- People mover

Map 8

New Airport - Downtown Link



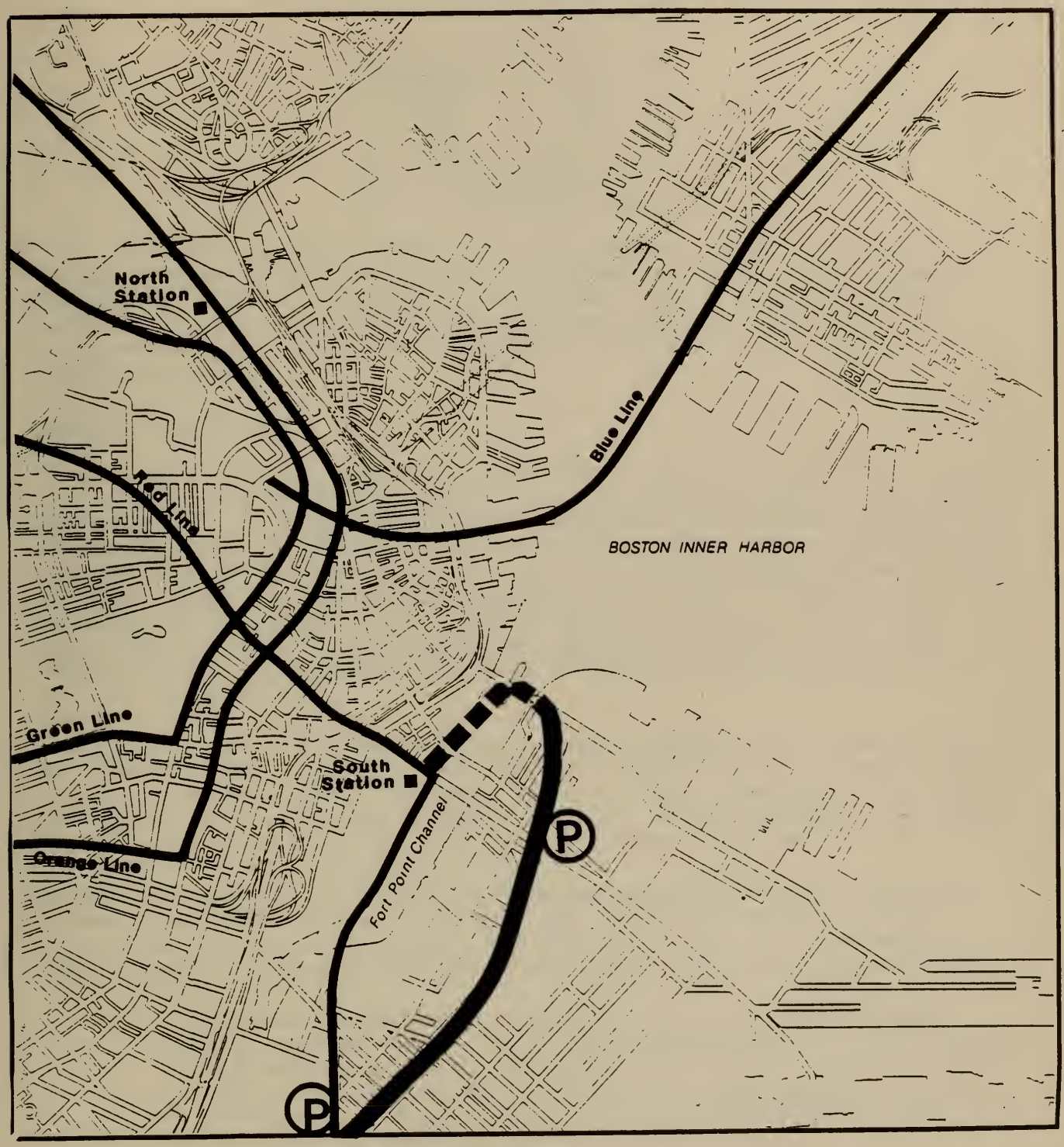
Existing MBTA Transit Lines

New Airport-Downtown Link

- Airport to South Station ($250-400 million)
- Rail or people mover

Proposed Blue Line Extension

Fort Point Channel Rail Cut/Parking Link Alternative



Rail Cut / Parking Link

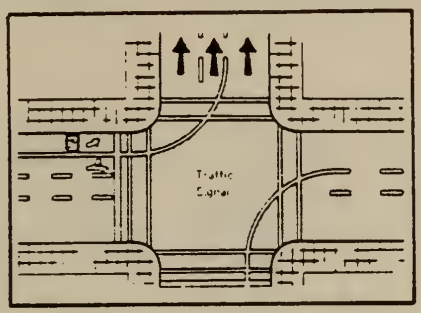
Possible inclusion of link to South Station

Existing MBTA Transit Lines

Remote parking near x-way ramps with easy transfer to a people mover

- Link cheaper remote parking to new developments (1.7 miles; $40-100 million)
- Extensions along Central Artery and/or Midlands
- People mover

TRANSPORTATION SYSTEMS MANAGEMENT



It is essential that we make wise use of limited street space in the dense commercial districts and neighborhoods of Boston. Transportation Systems Management is a tool for squeezing more capacity out of existing transport facilities. This is accomplished by implementing short-term and low cost improvements designed to more effectively accommodate traffic flows on existing roadways.

Details of the Strategy

Transportation Systems Management does exactly what the words imply: uses an innovative and systematic approach to better manage problems at troublesome locations. Transportation Systems Management can increase capacity and efficiency, reduce traffic conflicts, and increase safety. Some Transportation Systems Management measures are very simple applications of lane demarcations or signs. Some are more complex combinations of design, regulation and enforcement. In cities such as Hartford, Connecticut, Washington, D.C., and San Francisco, California, transportation planners are adapting new technology to handle old problems, and they are dusting off old technology to apply to new problems.

The right-of-way of a street includes two major sections, the sidewalk and the roadway. The distance between the right-of-way lines is, in most cases, the limit of space in which improvements can be made. In Boston, the luxury of widening the right-of-way is seldom available, and the problem is to balance the allocation of the existing width among the several demands.

Sidewalks should be wide enough to accommodate pedestrian movements and include street furniture such as street light poles, fire hydrants, parking meters, sign posts, benches, trees and other plantings. At intersections traffic signals, crosswalks, and wheelchair ramps must also be accommodated.

Transportation Systems Management measures balance these needs against those of vehicular requirements. The roadway is addressed from three points of view, through movements, turning movements, and curbside uses. In most cases it is preferable to eliminate one or more uses. Transportation Systems Management is the art and science of effecting this re-allocation and re-assigning these physical priorities.

Particularly, curbside issues are most difficult to deal with. These uses include parking, commercial loading zones, bus stops, taxi stands, drop-off and pick-ups. Special lanes for turn movements frequently require the curb lane as do some through movements.

In some cases there is excess street width and traffic paths are not clearly defined. In these instances, channelization is needed to improve traffic efficiency while providing opportunities for landscaping and areas of pedestrian amenities.

The use of curbside portions of a roadway is an important Transportation Systems Management concern. A basic rule of thumb in downtown and many neighborhood commercial districts is that a roadway is for moving traffic, not storage of vehicles. Use of curb lanes for parking, loading, or bus stops can be regulated by the city to increase roadway efficiency.

The capacity of a roadway system is not only determined by the physical width of streets and intersections, but also the manner in which they are used and operated. In Boston a number of chronic driver-related problems such as illegal turns, constant weaving, double parking, and illegal curbside parking, restrict traffic flows and reduce operating capacity. Jay-walking also impedes vehicular movement by causing vehicle-pedestrian conflicts.

In many cases, the capacity of an intersection approach could be substantially improved if an additional lane can be provided. It may not be possible to physically widen the roadway, but by the simple expedient of removing parking at the curb for a short distance a new lane for moving traffic becomes available. Such an action may then generate other revisions such as reallocation of the signal timing based on the revised traffic flows. The rearrangement of pavement markings can be of great assistance in improving intersection operation.

Efficient delivery of goods and services is vital to the city's well-being. If not properly managed this can become a major problem. Delivery vehicles parked while making deliveries become obstacles to other traffic.

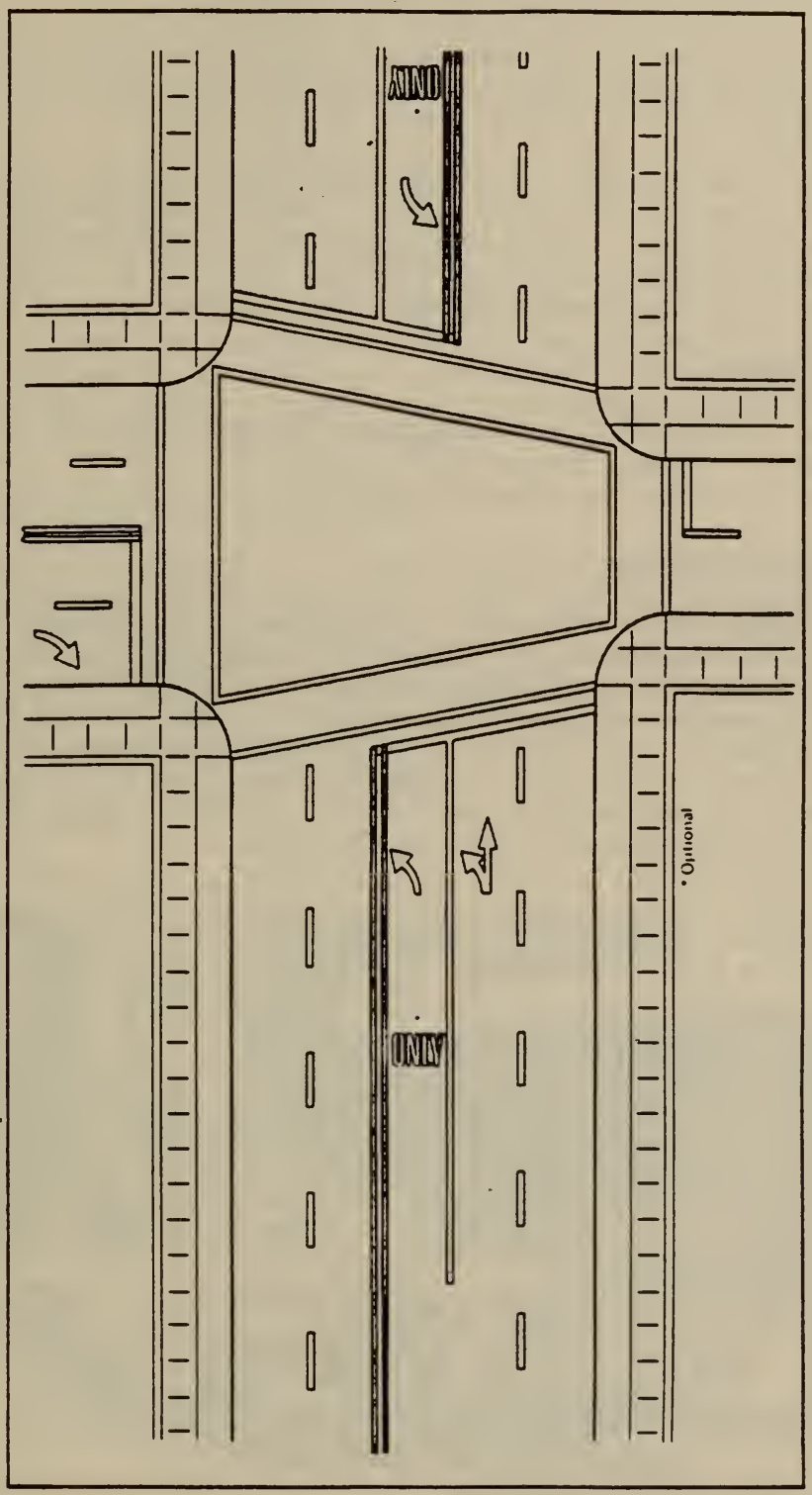
Although most larger and newer buildings have built in receiving areas, they are often inadequate. Retail and residential buildings often have no receiving areas and must accept all goods and services through their front doors. This activity causes parking conflicts and congestion.

Transportation Systems Management strategies seek to reduce vehicle miles travelled. Changes in street direction or circulation patterns can eliminate the necessity of going around the block to arrive at a particular point. In some cases provision of additional off-street parking spaces will result in encouraging drivers to go directly to a parking lot rather than cruise the streets looking for available curb space. In other cases supply of curb spaces can be increased by imposing short-term parking limits or more rigidly enforcing existing limits. Ridesharing is another travel-reducing program. It is discussed in the section on alternative travel modes.

Another Transportation Systems Management measure is to follow a balanced approach in the form of a three-pronged effort devoted to Engineering, Enforcement, and Education. The Three E's are being applied to the problems of the 1980's:

Figure 2

Traffic Intersection Lane Markings



- o Engineering involves attention to the physical aspects of roadways--capacity, design, maintenance, reconstruction, and regulation, to offer an environment which is conducive to safety, comfort and efficiency.

- o Enforcement is a multi-faceted effort to assure compliance with regulations controlling the movements of persons and goods.

- o Education includes formal training and public informational efforts. Traffic regulations and their public interest must be explained and demonstrated.

Finally, another Transportation Systems Management measure is recognize the need for maintenance of the system. When facilities are new the maintenance needs are easy to forget. Levels of maintenance on both the transit and roadway system have been receiving increased attention in recent years. The city encourages high levels of performance in this area.

Current Initiatives

The challenges of operating and maintaining Boston's highways, roadways and bridges are both a regional responsibility and a city concern. Recent programs underway or under consideration include:

- o Traffic Relief Program

  In this demonstration effort the Transportation Department and the Boston Police Department will pool their resources. Traffic engineering and operational planning efforts will be initiated in about ten neighborhoods. A pilot program is proposed to cover the area along Congress, Federal, Tremont, Arlington and Berkeley Streets, and in Dewey and Keaney Squares. Attention focuses on keeping all travel lanes open during morning and evening peak-hours. Traffic control officers will ensure that intersections do not get blocked.

Enforcement of parking laws

Existing parking regulations will be scrutinized to finetune the system. Where appropriate, parking will be removed to provide an extended turn lane or an additional travel lane. Signal timing will be evaluated at key intersections to reflect existing traffic conditions.

The tasks of enforcing moving violations and directing traffic at intersections currently falls within the jurisdiction of the Boston Police Department. The Transportation Department, in collaboration with the Boston Police Department, is currently reviewing the feasability of employing civilian traffic supervisors. This new unit all ensure that traffic flows in the most efficient manner possible at locations that experience chronic congestion problems.

- o Neighborhood Transportation Planning

In 1984, a series of studies and reports on Beacon Hill, the Back Bay and Fields Corner were produced. These neighborhood planning efforts will be expanded to Charlestown, East Boston, South Boston, South End, North End, and Uphams Corner area. Additional neighborhoods will be included as resources become available.

- o Computerized Traffic Control Signals

Implementation of a program to improve timing on almost half of Boston's traffic signals will begin next year. More than 250 intersections in the downtown area have been selected for the initial installation of modern computerized controls, at a cost of about $4.5 million. Based on live traffic counts, timing and control strategies will be easily adjusted from a central control location. The traffic data will be made available for transportation planning purposes.

- o Sign Maintenance

Another initiative being pursued by the city is the maintenance of sign, signals and pavement markings. These devices have a comparatively short life and are subject to considerable vandalism. However, the Transportation Department has made substantial strides in keeping these control devices current. These efforts are already becoming apparent.

- o Goods and Deliveries Policy Revision

The city is presently examining its policies on delivery and loading zones in order to prepare a new policy governing those practices. Matters to be investigated include the possible elimination of the present practice of renting curb space by private interests as commercial loading zones, restricting delivery hours and creating central loading and receiving areas.

- o Transportation Plans for Existing Buildings

The city has a number of buildings within its downtown core that house a large number of employees. The city will work towards developing public/private partnerships with the building managers and owners to prepare pilot transportation plans that will improve employee and delivery access, reduce the number of vehicle trips and decrease parking demand.

- Mitigation of Transportation Related Construction Activity

  Construction activity associated with new buildings or infrastructure improvements can greatly impact traffic flows, parking supply, and pedestrian safety. More effective management of construction activity will provide for closer coordination of projects, better reviews and improved enforcement of permits. The City will review its current procedures and implementation measures to provide a stream-lined and thorough construction mitigation.

HIGHWAYS, ARTERIALS AND BRIDGES

Chronic and intermittent congestion is experienced on the highway system every day to varying degrees and in various locations. This is not unique to downtown Boston. It inconveniences thousands every day in neighborhood commercial districts such as Roslindale Square, Fields Corner, Central Square and Mattapan. It is also common to many suburbs. Route 128/I-95 is well-known for its peak hour congestion. Framingham almost declared a moratorium on new development last year and has joined other western suburbs in a subregional group called Metrowest to deal with serious development and transportation matters.

The city of Boston suffers its share of these congestion problems, both from traffic generated by the city's activities and from regional trips passing through the city. Although new major corridor capacity is unlikely, improvements and upgrading of critical links and sections which act as bottlenecks can drastically improve the flow of traffic. The city has developed a program for arterial, bridge and intersection improvements and is working with the state to address existing highway congestion.

Central Area Highways

Central Boston has four critical problem areas which set the stage for daily tie-ups over a larger area:

- I-93/Route 1/Central Artery crossing of the Charles River
- Harbor Crossing deficiencies
- Access to Fort Point Channel/South Boston industrial area ("Seaport Access")
- I-90/Massachusetts Turnpike Interchange with I-93

These four areas have capacity, safety and other operational difficulties which can be corrected by effective but high cost projects. These projects will allow other sections of the network to operate more closely to their potential.

The first project to address these deficiencies is the Central Artery North project which is currently under design, and scheduled to begin construction in late 1986. This project reorganizes the intersection of I-93/Route 1/Central Artery and places most of the ramps and connections in tunnels. This project is estimated to cost $200 million.

Map 9

Boston's Major Street Network

The proposed Central Artery Depression and the Third Harbor Crossing shown on Map 10, with South Boston access incorporated in its southern approaches, addresses other deficiencies. The city is monitoring the progress and the design of this project, especially in terms of the short- and long-term impacts on adjacent neighborhoods, in order to minimize negative effects. The City's support is contingent on the mitigation of adverse impacts which include deteriorated public access, losses of parking, and business and job displacement. The city must be assured control of air rights development along the new artery corridor. The project holds the potential for improvement to Boston's interstate system. It is estimated to cost $2.6 billion and take fifteen years to complete. In the interim the city recommends the design and construction as soon as possible of the Seaport Access Roads and the South Boston bypass for congestion relief.

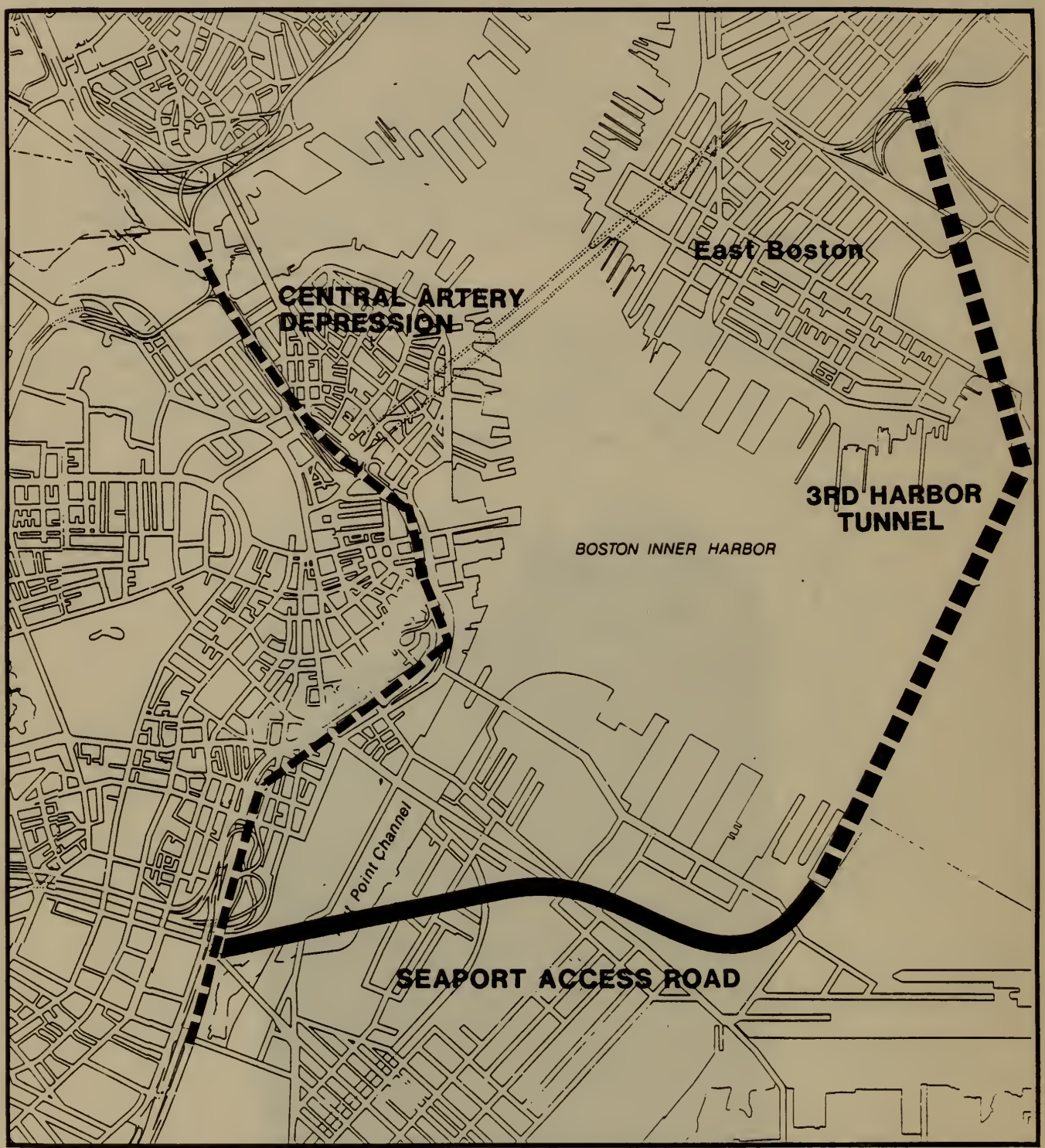
Major Arterials

Critical to improved access to the downtown core is the arterial roadway system. It provides access from the outlying areas of the city and the region to the downtown core. It includes the MDC parkway system, Columbus, Huntington and Commonwealth Avenues. An upgrading and expansion of Boston's arterial roadway system is necessary.

Roadway Reconstruction

Map 10

Long Range Roadway Proposals



- Seaport Access Rd. (approx. .6 Bil.)
- Third Harbor Tunnel (approx. .7 Bil.)
- Central Artery Depression (1.3 B.)

Total Cost 2.6 B.

This roadway system must receive continuous attention to ensure efficient, safe and environmentally sound operations. This means that physical conditions, traffic controls, lighting, landscaping and pedestrian amenities must be upgraded at various locations according to need. The city has developed a program to enhance its roadways. Streets included in this program are:

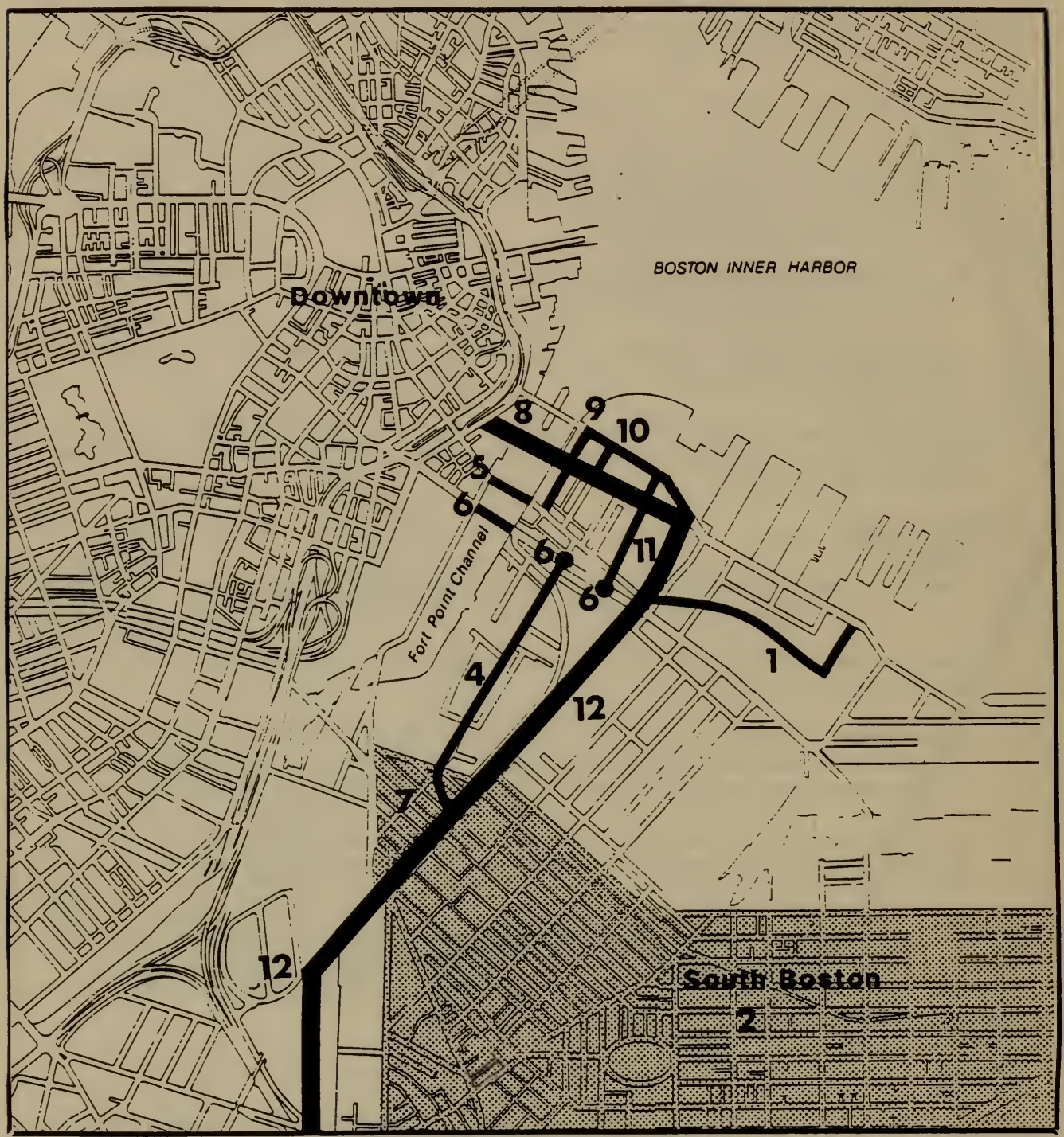
- North Station Arterials - improve Lomasney Way and Merrimac Street and collectors in the North Station redevelopment area - $5 million
- Lafayette Place, Essex Street - Improve Theatre District and Park Plaza area circulation providing relief for Chinatown and better access to the Central Artery - $5.0 million
- Blue Hill Avenue - upgrade arterial to increase ease of travel to downtown core and ensure pedestrian safety - $4.0 million
- New Dudley Street - improve crosstown circulation and access to Southeast Expressway - $2.8 million
- Columbia Road - upgrade the arterial, including signalization to increase ease of travel, improve access to downtown core, and assure pedestrian safety - $1.5 million
- Huntington Avenue - improve safety and efficiency - $6.0 million
- Herald Street - improve the link to the Southeast Expressway, provide relief to Berkeley Street and Chinatown - $10.0 million
- Main Street, Charlestown - upgrade the roadway to modern standards - $3.8 million
- Washington Street - reconstruct the roadway after the elevated MBTA structure is removed, increase ease of travel, provide improved access to the downtown core and assure pedestrian safety - $11 million
- Fort Point Channel Roadway Improvements - provide adequate access to growth areas while relieving South Boston congestion. See Map 11.

Integral to the arterial roadway system are intersection improvements to ease traffic flow at merger points. Several key intersections have been identified as problematic and in need of redesign. These include Leverett Circle, Charles Circle, Keaney Square, Cambridge/Bowdoin, Beacon/Arlington, Berkeley/Beacon, and Dewey Square.

Bridges

Improvements to the bridges within the city are important to enhance access to commercial and residential areas, and to help improve traffic flow. Several bridges are inadequate, and weight restrictions which often necessitate rerouting truck and bus traffic have been applied. The city's bridge reconstruction and improvement program pays special attention to improved access to the South Boston/Fort Point Channel area including new Northern Avenue and related connector roads, Congress Street and Summer Street Bridges. Reconstruction of the new Northern Avenue Bridge is anticipated to begin in 1987, and be completed in 1989.

South Boston Short Range Roadway Improvements

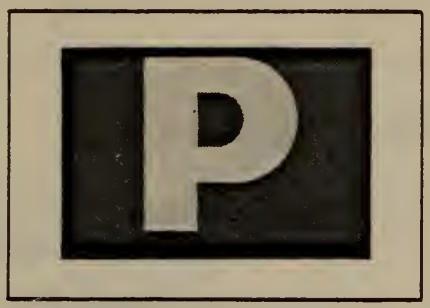


1. Haul Road
2. Neighborhood Traffic Improvements
3. New/upgraded signals
   - Harbor & Summer
   - "D" & West Seventh
   - Dorchester Ave. & Fr. Anthony Sonjin Way & Maj. O'Connor Way
   - "E" & West Third
   - East Eighth & L
   - L & Fifth Street
4. Repave "A" Street
5. Rehab/Reconstr. Congress Street Bridge
6. Rehab/Reconstr. Summer Street Bridge
7. Rehab/Reconstr. West 4th/5th/6th Street Bridges
8. New Northern Avenue Bridge
9. Relocated (new) Northern Avenue, Sleeper Street and Seaport Access Connector between new & old Northern Avenue
10. Connector Roads
    - Pittsburgh Street, Farnsworth Street, and old Northern Avenue
11. Seaport Access Connector Roads
12. South Boston By-pass

Additional bridges planned to be rehabilitated in the near future include:

- the West Fourth, Fifth and Sixth Street Bridges, and Boston Street Bridge in South Boston;
- the River Street and West Street Bridges in Hyde Park;
- the Bellevue Street Bridge in West Roxbury; and
- the Massachusetts Avenue Bridge linking the Back Bay to Cambridge.

PARKING: IMPROVED AVAILABILITY



A limited supply and a growing demand for on- and off-street parking spaces have combined to create a parking shortage in Boston. The city seeks to improve parking availability while addressing concerns about air quality and traffic congestion. Important considerations include meeting parking requirements in residential and commercial areas of the city and balancing the needs of residents, commuters, shoppers, and visitors.

Boston Proper contains approximately 70,000 legal parking spaces. Of these, 55,000 are provided in garages and lots, and roughly 15,000 spaces are on the street. About 35,000 of the off-street spaces are open to the public for a fee, the remaining 20,000 private spaces are reserved for employees, customers and visitors. The on-street parking supply consists of 6,000 metered spaces and 9,000 unmetered spaces. The Resident Parking Program accounts for approximately 6,500 of these on-street spaces in the downtown area. The characteristics of Boston's parking supply are illustrated in Figure 3. Several sites currently under construction were previously city of Boston public parking garages. These spaces will be reinstated as part of new development.

Two policies have limited the supply of commercial parking spaces downtown over the years: the Boston Parking Freeze and the Restricted Parking District. The Freeze Area and Restricted Parking District are shown on Map 12.

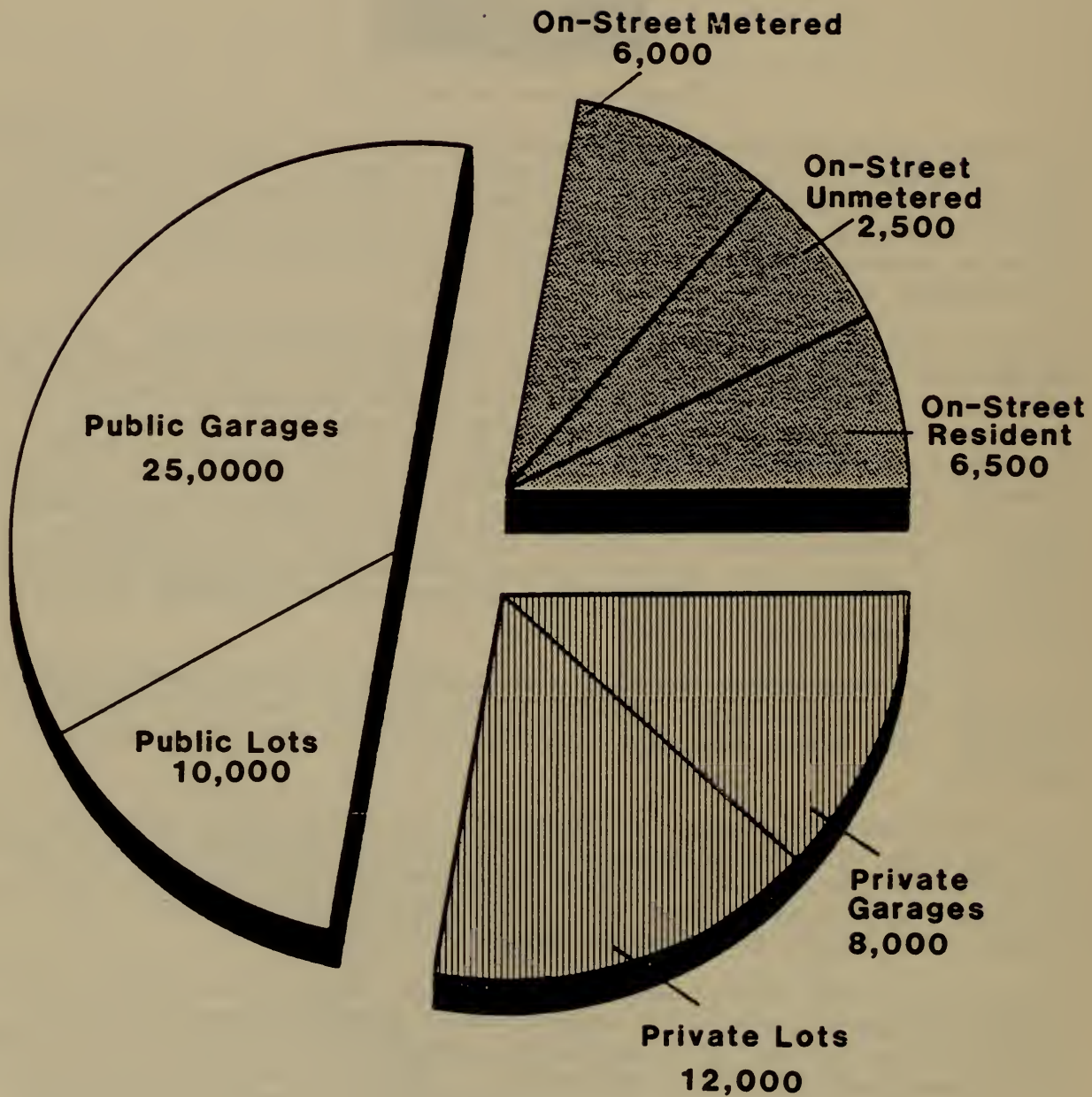
The Boston Parking Freeze was implemented to reduce vehicle miles travelled and to assist in reducing levels of carbon monoxide and other auto emissions. It is part of the Federally approved Statewide Implementation Plan which outlines measures being taken throughout Massachusetts to comply with National Ambient Air Quality standards by December 31, 1987.

Instituted in 1976, the present freeze in Boston Proper limits public off-street commercial parking spaces for which a fee is charged to the 1973 level of 35,503. Any time one of these spaces is removed from public use it is placed in a freeze bank for later reassignment. The Boston Air Pollution Control Commission must issue a permit for new commercial parking in the freeze area, provided the facility meets the Boston Air Pollution Control Commission criteria. Critical to approval is the availability of parking spaces in the freeze bank which currently contains fewer than 100 spaces.

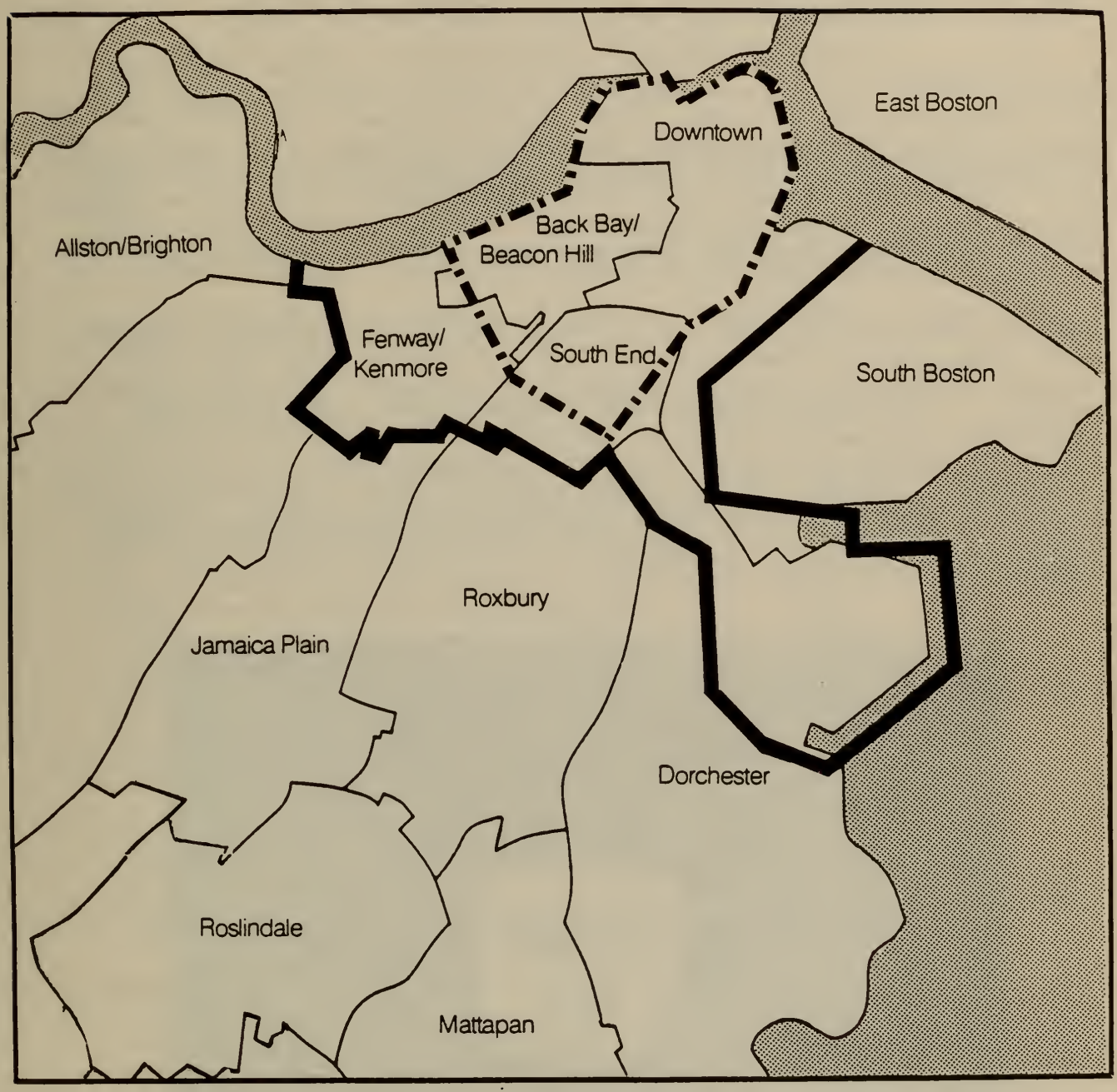
All non-commercial spaces are exempt from the freeze including residential, reserved employee, and hotel spaces. However, the Boston Air Pollution Control Commission must grant a special exemption before new facilities may be constructed for those purposes as well.

Figure 3

1983 Boston Parking Supply



1976 Freeze Area / Restricted Parking District



1976 Freeze Area

Restricted Parking District

A 1981 city analysis of the parking freeze revealed that the measure had effectively protected Boston from problems such as a dramatic increase in traffic, the premature demolition of older buildings, the proliferation of surface lots and a severe drop in the use of public transportation.

In addition the freeze area of Boston Proper is part of a larger Restricted Parking District in which non-residential parking is considered a Conditional Use, subject to approval by the Zoning Board of Appeal. The Restricted Parking District boundaries extend beyond the freeze area to the medical area in the Fenway, parts of South Boston and Dorchester, and down to Columbia Point. Designed to increase use of public transportation and decrease auto use downtown by limiting the availability of parking, the Restricted Parking District discourages developers from providing parking in the most densely developed part of the city.

Over the past ten years, the city of Boston has seen unprecedented development. The city's renaissance as the region's center for employment opportunities, residence, and entertainment has brought with it the need for more parking. A 1983 study estimated the downtown parking deficit at 8,000 spaces and projected the deficit by 1990 to be approaching 23,000 spaces. It's fair to assume that reductions to these projected deficits will occur due to increases in parking fees and improved public transit. Hardest hit by the shortage of spaces are the short-term parkers who come downtown between 10:00 a.m. and 3:00 p.m. to shop or pay an office visit as commuters have occupied the spaces early in the day.

Parking Demand Exceeds supply

Improved Parking Availability

The city can address the shortage of parking spaces in many ways: increase the supply, improve the use of existing spaces and residential parking, and improve the management and development of parking facilities.

Increase Parking Supply

New development is projected to require some 20,000 downtown parking spaces by 1990. The city can work to meet half of this demand by considering the following:

- Increase parking by 5,000-10,000 spaces at appropriate locations

  Expand parking by 3,000 spaces at South Station designed with a direct link to the highway system.

  Expand parking by 1,500 spaces at North Station designed with a direct link to the highway system.

  In addition, the city should evaluate locations for "fringe" parking facilities. These peripheral sites, served by major highways and/or public transportation, provide an alternative to driving downtown. It will allow highway commuters to drive to these facilities, park their cars, and travel downtown by express bus or transit. Such parking facilities would also help reduce traffic congestion on city streets. Potential "park and ride" sites include the Massachusetts Turnpike air rights, locations along Route 128, several MBTA stations, Fort Point Channel with direct access to the Third Harbor Tunnel/Seaport Access Road, and the Kenmore/Fenway area.

- Evaluate the Requirements of the Restricted Parking District

  It would be reasonable to require developers to provide parking at one-half the level necessary to support new project generated traffic. Developers who do not provide such parking might make a payment to a public parking fund which the public sector could use to build additional parking facilities or manage the parking supply.

- Modify the Parking Freeze

  The Parking Freeze limits the number of parking spaces open to the general public. Any parking requirements in conjunction with downtown development would probably violate the Freeze. In general, since the Freeze bank of spaces to be allocated is very small, there is little room for parking to increase to even modestly serve new development. Given a potential demand of more than 10,000 spaces the Freeze needs modification.

  Since the Freeze was implemented, Boston experienced a building boom which has produced increased parking demand while the commercial supply is limited to the 35,503 freeze level on spaces. Since the number

of parking spaces has increased and traffic to the city has increased by 15% since 1972, it is difficult to attribute any air quality improvements specifically to the Freeze.

Any Freeze modification must be devised in accordance with Clean Air Act requirements and gain approval from state and federal agencies. The city is presently studying the Freeze from this perspective.

Improve Use of Existing Parking Spaces

The city will implement a number of strategies to encourage more efficient use of existing parking spaces. These strategies include:

- Reviewing possible assignment of employee spaces (parking-freeze exempt) as mid-day public parking spaces not to open before 10:00 a.m. on weekdays.
- Expanding the freeze bank to include a "midday parking bank".
- Introducing pricing policies that encourage short-term parking in central areas and long-term commuter parking in fringe areas.
- Increasing meter locations downtown and in neighborhood commercial districts.

Metered Parking

Improve management and development of parking facilities.

Physical and managerial improvements of facilities will aid the implementation of increasing parking availability.

- Granting of freeze permits for new facilities will be contingent upon an additional criterion that a portion of the capacity will be reserved for parkers arriving after 10:00 a.m. The number of spaces reserved for short-term mid-day parkers will be based on existing and projected short-term parking needs of the area where the facility is located.

- Requiring that new facilities are designed to accommodate vanpool vehicles and that a percentage of spaces will be designated for carpool usage based on current and projected demand for long-term carpool parkers.

- Making freeze permits for new public parking facilities and exemptions for employee spaces ancillary to developments over 100,000 square feet contingent on Boston Air Pollution Control Commission, Transportation Department and Boston Redevelopment Authority approval of an Access Plan for the site. The access plans will include analysis of peak and off-peak travel to the site and commitments to traffic mitigation measures.

- Emphasizing attractive and convenient pedestrian connections to transit services and among activity centers to support the use of transit and encourage walking.

- Establishing new "parking management districts" which would freeze the number of total public parking spaces in the area to be expanded based on roadway capacity improvements. Employee spaces will not be exempt and proposed parking facilities will not increase traffic through residential neighborhoods or displace existing residential uses. These districts are being considered for the South Boston-Fort Point Channel area, East Boston and Charlestown.

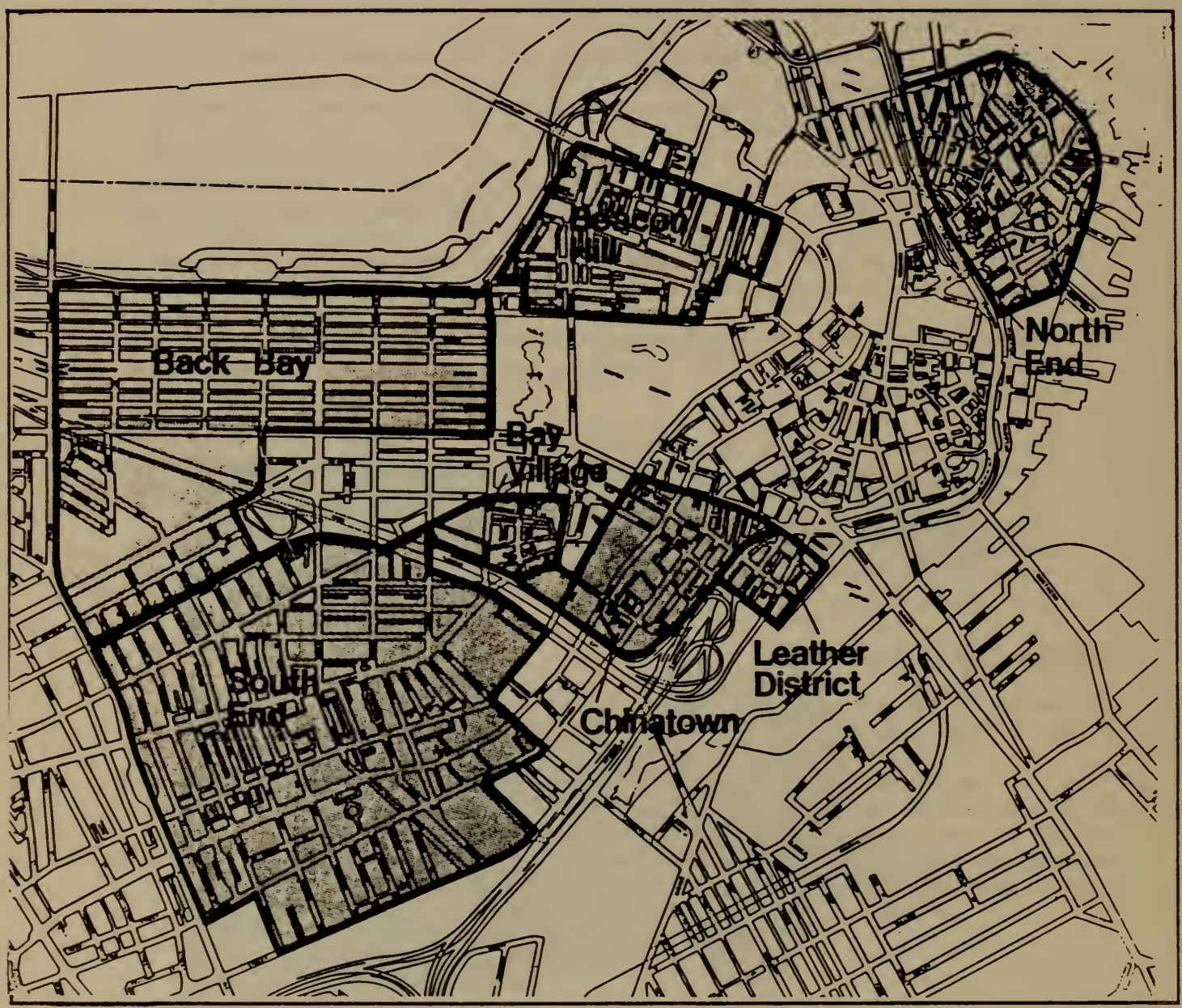
Improve Residential Parking

Residents of the city have difficulty finding on-street parking near their homes. This problem needs to be fully evaluated and addressed.

The city has expanded its resident-parking program. This program reserves on-street spaces for residents of specific neighborhoods who had difficulty trying to park near their homes. Several of the neighborhoods are within walking distance from the downtown and commuters would park there all day. Map 13 shows the downtown resident permit parking districts.

Map 13

Downtown Resident Permit Parking Districts



- Continue to support the Residential Parking program and expand where appropriate.

Resident Parking

- Take advantage of different parking times for different parking uses. For example, allow residents to use vacant employee spaces on nights and weekends.

- Evaluate establishment of off-street resident parking facilities. In numerous city neighborhoods, the limited opportunities for short-term parking often results in double parking. This is extremely detrimental to traffic flow and to businesses.

  Ideally, the streets of the city should be used to move traffic rather than to park vehicles. Removing parked cars would increase our roadway capacity and make travel easier. Off-street resident parking is also being considered for neighborhoods which simply do not have sufficient street space to accommodate the number of resident cars in the area.

ALTERNATIVE MODES OF TRANSPORTATION

It is important to recognize the variety of ways by which the need for mobility can be satisfied. Alternative modes of travel serve thousands of people every day. They often take on greater significance during unusual circumstances, such as major snow storms or accident-caused gridlock. Those which are in operation now are given attention here. These include:

- o Water Transportation
- o Taxi Cabs
- o Pedestrians
- o Ridesharing
- o Bicycling
- o Helicopter Usage
- o Special Needs

Water Transportation

The city of Boston, through its harbor, gained historic prominence as a center of shipping and international commerce. In recent decades the central role of the port has lessened. The city and region turned inland. The harborfront suffered from inappropriate development, pollution and inaccessibility.

The city of Boston and the Commonwealth recognize the need to develop a comprehensive water transportation system. It will enhance the revitalization of Boston Harbor, provide alternative modes of travel for commuters and encourage Inner Harbor water shuttle services.

Commuter services from the South Shore have been growing. Current ridership is almost 1,500 per day. Expansion to additional areas which lack good highway access to downtown should be encouraged and the city is examining additional locations for commuter docking facilities. A Harborpark goal is to triple the number of commuter trips on water transportation. Planners concerned about truck and worker traffic to be generated by construction of the Deer Island water treatment facility are turning to water transport as an alternative. Similar steps may be desirable during the Third Harbor Tunnel/ Central Artery Depression project.

Long Wharf Water transportation

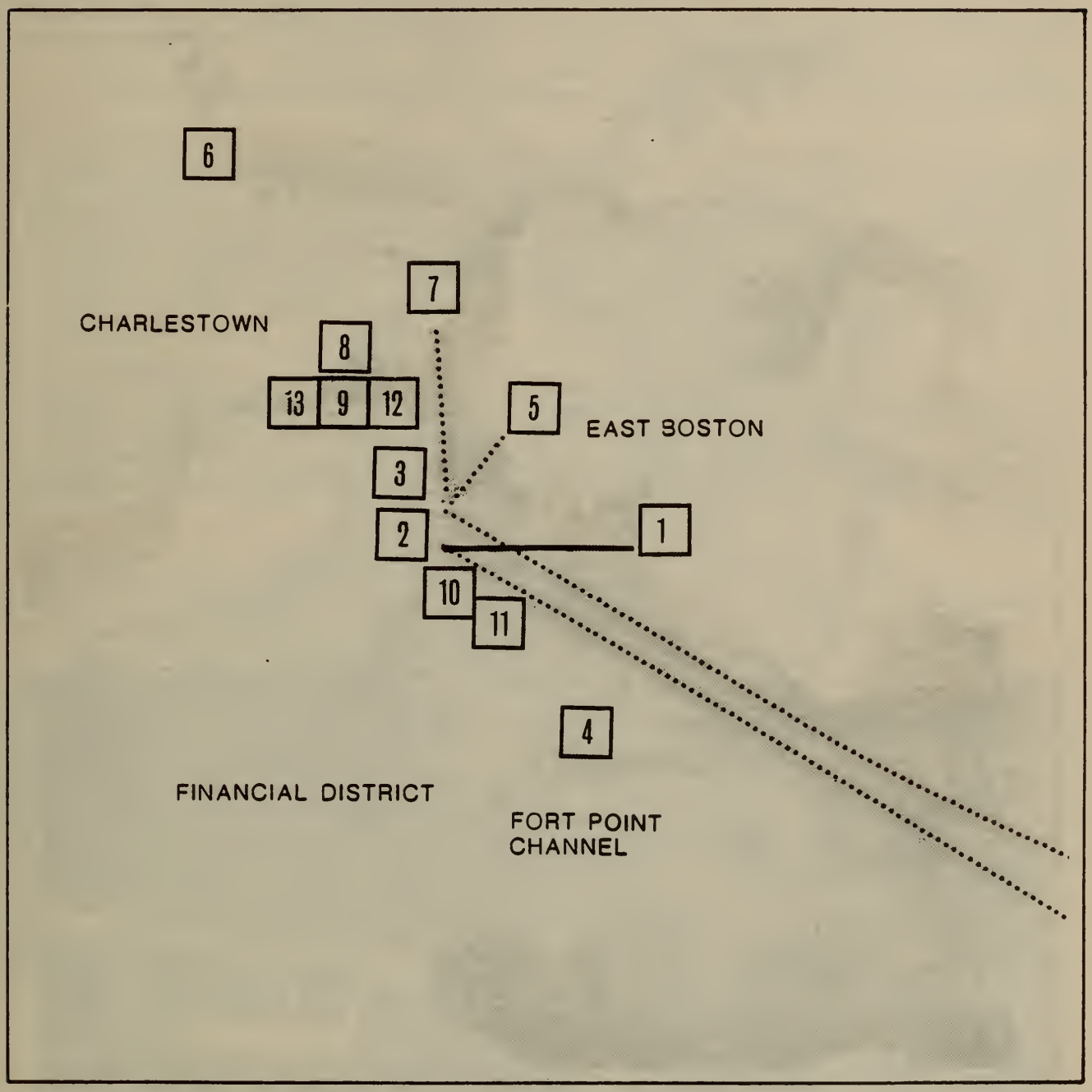
It is imperative that water transportation be an integral component of an overall transportation network. To this end, the necessary infrastructure must be created to ensure a well-maintained and well-administered water transportation system. Plans for major improvement and expansion of facilities at Rowes/Foster and Long Wharves are underway. There are other plans for the Fan Pier and Pier 4, and perhaps North Station and other locations as well. Water transportation terminals and waterfront development sites are illustrated on Map 14.

Pedestrian

Boston has long been a "walking" city -- pedestrian scale and full of people willing and eager to walk. Increased downtown living is resulting in larger volumes of people moving around downtown by foot.

Boston Inner Harbor Water Transportation Terminals

Map 14



MAJOR BOAT TERMINALS

1. LOGAN SOUTH
2. ROWES WHARF
3. LONG WHARF
4. RESERVED CHANNEL

MAJOR REDEVELOPMENT SITES WITH WATER TRANSPORTATION ACCESS

5. EAST BOSTON PIERS
6. THE SCHRAFFT'S CENTER
7. CHARLESTOWN NAVY YARD
8. HOOSAC PIER
9. LINCOLN WHARF
10. PIERS 1-4
11. WORLD TRADE CENTER/ BOSCOM
12. SARGENT'S WHARF
13. NORTH STATION AREA

Present policy is to encourage the desirability of pedestrian activity. Indeed, the location of many recent residential developments anticipates use by a large number of people who either do not own a vehicle or who use their vehicles only for weekends and special occasions. The city encourages developers to include pedestrian and other public amenities in commercial projects as well.

Many recent enhancements to Boston's pedestrian network include deliberate attempts to untangle conflicts with traffic. The Quincy Market and City Hall area provide relief from automobile traffic. The Boston Common, Public Garden and Commonwealth Avenue promenade function as a beautiful pedestrian access corridor. The success of Downtown Crossing's auto-restricted zone has created a desire to expand it to Summer and Washington Streets. This must be carefully coordinated with traffic circulation schemes, parking policies, and urban design.

The Walk-to-the-Sea and the Harborpark have recently joined the Freedom Trail as prominent components of the waterfront pedestrian landscape. Public access to the sea and water transport will increasingly be an important part of Boston life. Park Plaza will soon be remodeled with pedestrian amenities in mind, expanding onto a comprehensive streetscaping treatment down Boylston Street.

Downtown Crossing

Central Boston's Major Pedestrian Network and Needed Improvements

RESIDENTIAL NEIGHBORHOODS

PEDESTRIAN PRECINCT: EXISTING OR UNDERWAY, INCLUDING ,PARKS and MALLS

DISTRICTS OR INTERSECTIONS NEEDING PEDESTRIAN IMPROVEMENTS

City policy encourages a pedestrian environment which avoids dangerous conflicts with vehicular movements where necessary. Underground passages and skybridges, such as those at Copley Place, convenient curb cuts for wheelchair access, richly textured yet safe pavement materials and amenities and improved pedestrian signals will be part of the pedestrian network.

Two areas of Central Boston require special attention. One is the Dewey Square area where transit users fan out over the streets in conflict with heavy traffic. The other is the Back Bay Station where improved landscaping can accommodate and enhance major new pedestrian flows when the Southwest Corridor and new developments open.

Most of the remaining MBTA stations and their pedestrian connections deserve attention. Many stations have been successfully renovated, but there are more opportunities to improve physical connections, cleaning and maintenance, and the reliability of escalators. New and existing developments are encouraged to provide direct pedestrian connections and improvements to stations as part of comprehensive transport management agreements.

Taxi Cabs

The taxi cab industry is an integral part of transportation in the Boston area. In the city of Boston more than 1,500 taxis carry over 140,000 persons per day. With a substantial number of taxi cabs from outside Boston, the total number of persons transported becomes even more significant. Furthermore, taxi cabs are increasingly used for the purpose of package deliveries which adds to the number of vehicle trips using the street system.

Although more than half the Boston taxis are radio equipped, a majority of passengers are picked up on the street. This encourages taxi drivers to circulate, adding to the traffic. Consideration must be given to the problems of handling taxi operations in a more effective manner for both the driver and passengers.

Efforts to improve taxi operations include two major city initiatives. First, a regular monthly liaison meeting has been established by the Transportation Department with representatives of the taxi companies and the Police Department. If other agencies or groups are affected, they are invited to sit in. Second, the Hackney Division of the Police Department has been expanded and strengthened. This will enable them to effectively administer and enforce Hackney regulations.

For many persons visiting Boston, the first person they speak to is a taxi driver. A program of education and information to assist the drivers in responding to questions and comments is proposed. Programs have been successfully implemented in many other cities, benefitting drivers as well as the public.

Ridesharing

While many commuters prefer to drive alone, more people are taking advantage of ridesharing opportunities. Whether through informal carpooling or form-

alized programs such as CARAVAN, ridesharing is on the upswing, increasing vehicle occupancy and reducing both vehicle-miles traveled (VMT) and parking demands.

Last year CARAVAN reported the use of 96 vans traveling to and from Boston, up from 33 in 1981. As part of the city's effort to encourage this program, special car and vanpool spaces have been reserved in certain parking lots. More spaces will be reserved to encourage this mode of travel.

A variation of ridesharing is the subscription bus service in which the vehicle is larger than a van, but each subscriber is guaranteed a seat. Special problems of pick-up, drop-off and layover may be faced by these vehicles, but the reduction in the number of vehicles and VMT is well worth the effort to resolve these problems.

One of Boston's major industries is tourism. The popularity of bus tours is growing and there is an expanding business in providing sightseeing tours around this historic city. Not only does this emphasis give tourists a better and more informed view of the city, but it helps to keep down the number of unfamiliar drivers cruising about the city and seeking elusive parking.

Ridesharing Van

Bicycles

Bicycles are commonly used for recreation, but recently more commuters have turned to this mode as a means of accessing their workplace. Some special bicycle paths have been provided, especially along some of the parklands. However, most commuter bicyclists prefer to ride in the roadway as a unit of traffic with no special treatment other than the acknowledgement of their rights by automobile drivers.

More emphasis must be given to the provision of adequate bicycle storage facilities and related amenities such as locker rooms and showers. In addition, increased use of recreational facilities by bicycle riders will be provided as part of Harborpark, with future efforts aimed at providing a comprehensive network of city, state, and MDC bicycle routes.

Helicopter

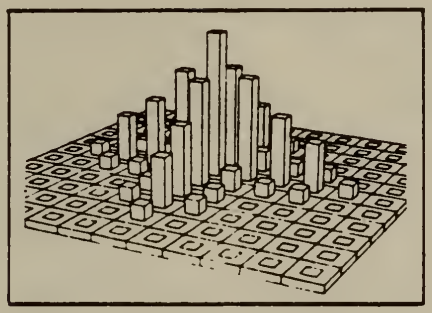
Boston's growth as a financial and research center, its location within helicopter range of New York and most of the Northeast, and its position at the hub of high tech manufacturing in New England, have created a growing demand for helicopters and associated landing facilities. There are a number of uses in which time is crucial, such as rescue, ambulance services, high-value financial transactions, and "info-tech" seminars in which helicopters may have a significant role. A Boston Redevelopment Authority study now underway, financed by grants from the Federal Aviation Administration and the Massachusetts Aeronautics Commission, will begin the process of developing integrated helicopter landing facilities in the city. City officials will ensure that any negative aspects of heliports are negligible.

Special Needs

Transportation service provision for the elderly and the handicapped is growing each year. Not only are there more elderly and handicapped persons to be served, but there are also more programs which include transportation as part of their total operation. Both public and private agencies are expanding their activities. The MBTA has addressed the recently expanded special needs program with "The Ride". The Kit Clark Senior House operates "The Ride" in many city neighborhoods.

The major problems to be addressed are parking and drop-offs and areas for special needs vehicles. Most of this service must be door to door. Special needs vehicles may be allowed into certain streets where private traffic is restricted. More emphasis needs to be given to improving handicapped access to existing public transit facilities.

TRANSPORTATION IMPACT ASSESSMENT



In the period between 1963 and 1983 twenty million square feet of new office space was built in the city of Boston. Between 1984 and 1989 approximately fourteen million square feet is expected to be completed. New development continues to draw people into the downtown, placing new burdens on the city's already strained transit and highway systems. The foreseeable benefits of new development and the goals of the campaign to protect Boston as a liveable city cannot be realized without addressing the growing problems of traffic and parking. Effective land use decisions relating to site development must co-exist with efficient transportation policies and mitigation procedures.

The goal of a coordinated development and transportation policy is to ensure that development continues to occur but to manage it in such a way that it allows people and vehicles to move freely throughout the city. Transportation policy influences where development will occur and development influences traffic and circulation patterns.

To this end the Boston Transportation Department and the Boston Redevelopment Authority will supplement existing development review procedures by requiring that applicants for major development projects submit access plans that evaluate the project's impact on existing traffic and circulation and provide the means to mitigate adverse impacts.

Review of traffic and parking already occurs at the federal, state and local government levels. In 1969 legislation for the National Environmental Protection Act was established. Because of the National Environmental Policy Act all projects using federal funds must complete an Environmental Impact Statement which identifies the potential impacts of a project and sets forth environmental mitigation procedures.

It is through an Environmental Impact Statement that probable transportation related problems with mitigation should be identified. The Environmental Impact Statement review process enables a variety of governmental agencies and private interests the opportunity to comment.

At the state level, the Commonwealth has established an environmental review process, the Massachusetts Environmental Protection Act, for state actions which may cause damage to the natural environment. The Massachusetts Environmental Protection Act requires the review and evaluation of projects to determine when formal Environmental Impact Reports are required.

The Boston Redevelopment Authority established a set of environmental review regulations in 1974. Over the last decade the Authority has required developers to prepare special reports for major development projects where

New Construction

Massachusetts Environmental Protection Act jurisdiction does not exist or is extremely limited. The environmental requirements are set forth in the Boston Redevelopment Authority's "Development Review Procedures". Consequently, transportation review has been an ongoing process for the city of Boston.

Developer kits are an initial process through which the city guides development proposals. The Boston Redevelopment Authority, through the zoning process, may also review transportation impacts. Urban Renewal projects, Planned Development Area proposals and Development Impact Projects evaluate the land use activities and the impacts on traffic and parking, among other planning concerns. Zoning Board of Appeal cases for major downtown projects and small scale developments throughout the city are also reviewed by the Boston Redevelopment Authority transportation staff, evaluating access, congestion and parking related issues.

To facilitate proper transportation planning, further support the review process already in place, and implement a standard review procedure it is necessary to:

- Amend Boston's Zoning Code to require the submission of Access Plans for projects of a certain scale or in particular locations. Access plans will establish review standards and criteria. Additionally, the city's Transportation Department, together with the Boston Redevelopment Authority, will review a project's access plan.

- The new transportation impact analysis process will reflect some of the work that is already being done. It is important to note that the rules and standards for the process will be published as part of the city's Zoning Code where they will be readily available to all participants in the development process. Major development projects, defined as commercial projects over 100,000 square feet, residential projects of more than 100 dwelling units, and retail projects of more than 50,000 square feet will be required to submit access plans when the city determines that they will have a significant impact.

- Access Plans will cover short- and long-term impacts of development. More specifically, the short-term impacts covered will include construction impacts, in particular, a description of proposed parking for trucks and cars, times and routes of truck movements and construction deliveries, storage of construction equipment and materials, and the mode of transport for construction workers. The long-term impacts covered in an access plan will include traffic and parking, in particular, the mode of transport for employees, pedestrian circulation routes and the location of loading and servicing facilities. The number, type, location and size of proposed parking spaces and the expected fees and hours of use, and other transportation features related to the project and the site will also be included in access plans.

In the access plan developers will show how they will mitigate the impacts of their projects on existing traffic and circulation systems. Mitigation measures of the plan may include:

- transit subsidies;
- differential parking fees;
- pedestrian connections;
- ridesharing;
- vanpooling; and
- shuttle buses or other alternatives.

Monitoring and enforcing mitigation measures and access commitments are integral parts of an access plan. Developers, the Boston Transportation Department and the Boston Redevelopment Authority will enter into agreements whereby developers will periodically provide the city with follow-up information on how employees and visitors travel to work. If more workers use cars than the number anticipated in the access plan, or if mitigation measures have proven to be ineffective, it may be necessary to revise the plan to accommodate current conditions.

Where there are a number of separate developments proposed for one area of the city, developers will be required to contribute funds and resources toward producing an area-wide transportation impact study for that area. Under a proposed cooperative, comprehensive transportation planning system, the city's Transportation Department will coordinate the preparation of such studies. An example where this new system would be both cost effective and efficient is the Bedford Crescent/Essex Street area in the downtown. Within this area there are currently over seven development proposals before the city for an area of approximately twenty square blocks. Under the old transportation impact analyses, developers would prepare separate transportation impact studies for their individual projects. In this particular example, the total expenditure for the private sector in completing such studies could exceed well over a million dollars. Such expenditure of funds for individual reports is extremely inefficient and not cost effective. It is also not an accurate representation of the aggregate transportation impact for an area which is currently facing a number of different development proposals.

In addition to the area-wide approach to transportation impacts, the city will encourage developers to set up transportation management organizations to provide or coordinate alternative forms of transportation such as ridesharing or vanpooling on an area-wide basis.

LEGISLATION

Laws and legislation on state and federal levels affect the city's and region's ability to administratively, physically and monetarily address the transportation access problems outlined in this document. Implementation of changes or improvements is often defeated by the lack of authority or regulatory requirements. Several policies proposed in this report require legislative lobbying aimed at increasing the city's funding and legislative authority. These changes are important for improving access and circulation in the city and the region as a whole.

Public transit is not being viewed by the federal government as a vital element in the overall urban infrastructure. Most alarming are the movements within the Reagan Administration to reduce funding for public transit. Transit is the backbone for transportation in the Boston region. Any decrease in federal transit funding, whether capital or operating, will be extremely detrimental to the viability of public transit in the area. .

The federal practice of delaying capital grant awards for which funds have been appropriated by Congress must be reversed. This tactic has been used as means for reducing federal spending on transit projects. Recent proposals such as "urban mobility grants" which propose a "block grant approach" for transportation also decrease the overall funding. It is the responsibility of the city, its regional neighbors, and the state to participate actively and loudly in discussions and efforts to reverse this trend.

Any reduction in transit support will necessitate the implementation of a variety of offsetting measures. These could include increased state transportation bonding, fare increases, service reductions, layoffs of transit employees and the deferral of important maintenance and expansion projects aimed at increasing the reliability and availability of transit services.

The roadway and bridge program is gearing up to utilize existing federal and state monies such as the recently signed State Transportation Bond. Federal budget actions, such as the new Gramm Rudman legislation, potentially would cut the overall transportation budget by up to 5%.

Changes to the parking freeze as part of the State Implementation Plan for compliance with National Ambient Air Quality standards will require both federal and state concurrence.

On the state level the city is pursuing changes to existing legislation. One very important effort is amending Chapter 90 which outlines traffic regulations and rules for the Commonwealth. The city is pursuing changes to state legislation which sets limits on fees for parking and towing violations. This year fees for double parking and public safety violations were increased to demonstrate the seriousness of these actions.

The authority to tow vehicles is set by state statute, authority being limited to Boston police officers with the rank of Sergeant and above. Amendments permitting the Transportation Department to have the authority to tow vehicles which are obstructing traffic movement are being investigated. Further, the city currently does not have the ability to regulate fees charged for off-street parking. This ability has been seen as a regulatory strategy to promote short-term parking and discourage long-term parking, especially in the downtown core versus fringe parking areas.

Efforts at both the state and federal level to amend laws and affect legislation are critical to the city's ability to implement its overall transportation improvement strategy. Threats of federal funding cuts regarding transportation need to be answered strongly, and regulations which prohibit the execution of traffic management and parking improvement programs need to be amended.

GOVERNMENTAL AND COMMUNITY INVOLVEMENT

The city's transportation goals are based on a balanced approach to provide for improved access. They are designed to help people move safely and conveniently. The goals balance transit and roadway use, while providing for the increased availability of parking and alternative modes of transportation.

The city's transportation improvement goals will require varying periods of time for full implementation. In some cases goals can be achieved by immediate action, in others the time period is lengthy. In order to ensure that there is sufficient community input, discussion and review while projects are being proposed and implemented, public participation in the transportation planning process is necessary.

The city will establish a city-wide Transportation Advisory Committee. Members of the Transportation Advisory committee will represent a cross section of city interests including representatives from downtown Boston, the business and development communities, civic and community organizations, public institutions and state transportation agencies.

The Committee will study the city's transportation improvement policies, help mediate transportation issues and advise on transportation problems. The Committee will work closely with the city's Transportation Department to help improve the region's overall transportation services, study alternative modes, develop measures for relieving traffic congestion, review major roadway improvements, work towards transit connectors within the city and bring relief to the parking shortage.

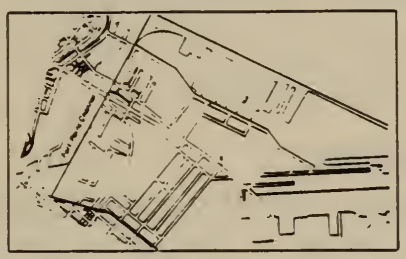
Boston agencies and departments such as the Boston Redevelopment Authority, Boston Police, Public Works and Real Property Departments, and the Mayor's Office of Capital Planning will be incorporated into the Committee planning process.

While improving access will be a major goal of the Transportation Advisory Committee, the Committee will help ensure that the city's transportation policies play an important role in achieving other city goals such as jobs for Boston residents, affordable housing, protecting our neighborhoods and continuing the growth of our city. The Transportation Advisory Committee will be the new forum for the discussion of transportation issues and the setting of transportation priorities.

Finally, structured forums should be established that will lead to more consistent opportunities for related state and city agencies to meet and address operational and planning problems and issues facing the region's and the city's transportation system. Cooperation and coordination of the various government agencies involved with transportation is essential.

APPENDIX I

FORT POINT CHANNEL: A CASE STUDY



Planned for Fort Point Channel

With the presence of six hundred vacant and underdeveloped acres close to the downtown business district, Fort Point Channel is a tremendous resource for the City of Boston. Significant development is already underway, and more is planned for the next 20 years. Guiding further development in this area poses a challenge and an opportunity to balance public responsibilities and private interests. The planning process must address questions of density, access, and provision of transportation improvements.

The Third Harbor Tunnel and other arterial improvements will dramatically improve highway access to the area, yet comparable transit infrastructure has not received adequate attention. The City seeks to redress this imbalance by proposing a number of transit and transportation management options which will complement the arterial network.

Public Transportation

Public transportation is the backbone of Boston's transportation system. During morning and evening rush hours, about 65 percent of the people heading to downtown Boston use public transportation. As the Fort Point Channel area is developed, more and more people will seek access to that area for jobs, shopping, and residential trips. Current public transportation service to Fort Point Channel is minimal, limited to a few bus routes, and needs to be expanded.

Some short-term improvements to public transportation service to this area, anticipated for 1990, include:

- Lengthen the platforms on MBTA Red Line to allow longer trains and thus increase capacity.

- Initiation of shuttle bus service between transit stations and development sites in the area.

- Development of a people mover loop to distribute passengers from South Station to the piers and move drivers who park at new fringe parking garages (to be developed at exit ramps from the expressway network).

Longer term options, some of which are still in the early planning stages and are not expected before 1995, include:

- o Completion of South Station Intermodal Facility
- o Development of a transit connector from South Station to Logan Airport, through the Fort Point Channel area

Transportation Systems Management

An important component of the city's transportation management program is preparing neighborhood transportation studies to identify local traffic, parking, and access issues. The Fan Pier/Pier 4 developers have agreed to support a transportation study for the South Boston community.

Other management measures planned for Fort Point Channel include:

- o Implementation of identified neighborhood traffic improvements
- o Installation of new/upgraded traffic signals
- o Repaving of 'A' Street

Highways, Arterials, and Bridges

Improving and upgrading critical roads, intersections, and bridges can improve the flow of traffic and enhance safety. Given the projected traffic increases in the Fort Point Channel area, such improvements are vital. Plans currently underway for improving roads and bridges include the following.

Roadway Construction:

- o Completion of construction of the Haul Road
- o Construction of relocated New Northern Avenue, Sleeper Street and Seaport Access connector roadway inbound between Old and New Northern Avenues
- o Construction of South Boston By-pass
- o Construction of Northern Avenue connector roadways, including Pittsburgh and Farnsworth Streets, and Old Northern Avenue
- o Construction of the Seaport Access Roadway and connector roads
- o Construction of Third Harbor Tunnel
- o Depression of the Central Artery

Bridge Program:

- o Rehabilitation/reconstruction of:
  - Congress Street Bridge
  - Summer Street Bridges
  - West 4th, 5th, and 6th Street Bridges
  - Northern Avenue Bridge

Parking

As traffic increases in Fort Point Channel so will demand for parking spaces. The city seeks to balance this growing demand for parking while addressing concerns about air quality and traffic congestion.

Strategies to implement these goals include:

- o Construction of 3,000 additional spaces at South Station and along the old Colonial right-of-way, designed with direct ramps to the highway system and linked to a people mover for distribution.

- o Reserving a percentage of project-related spaces for midday short-term users.

- o Reserving a percentage of project-related spaces for vanpools and car-pools.

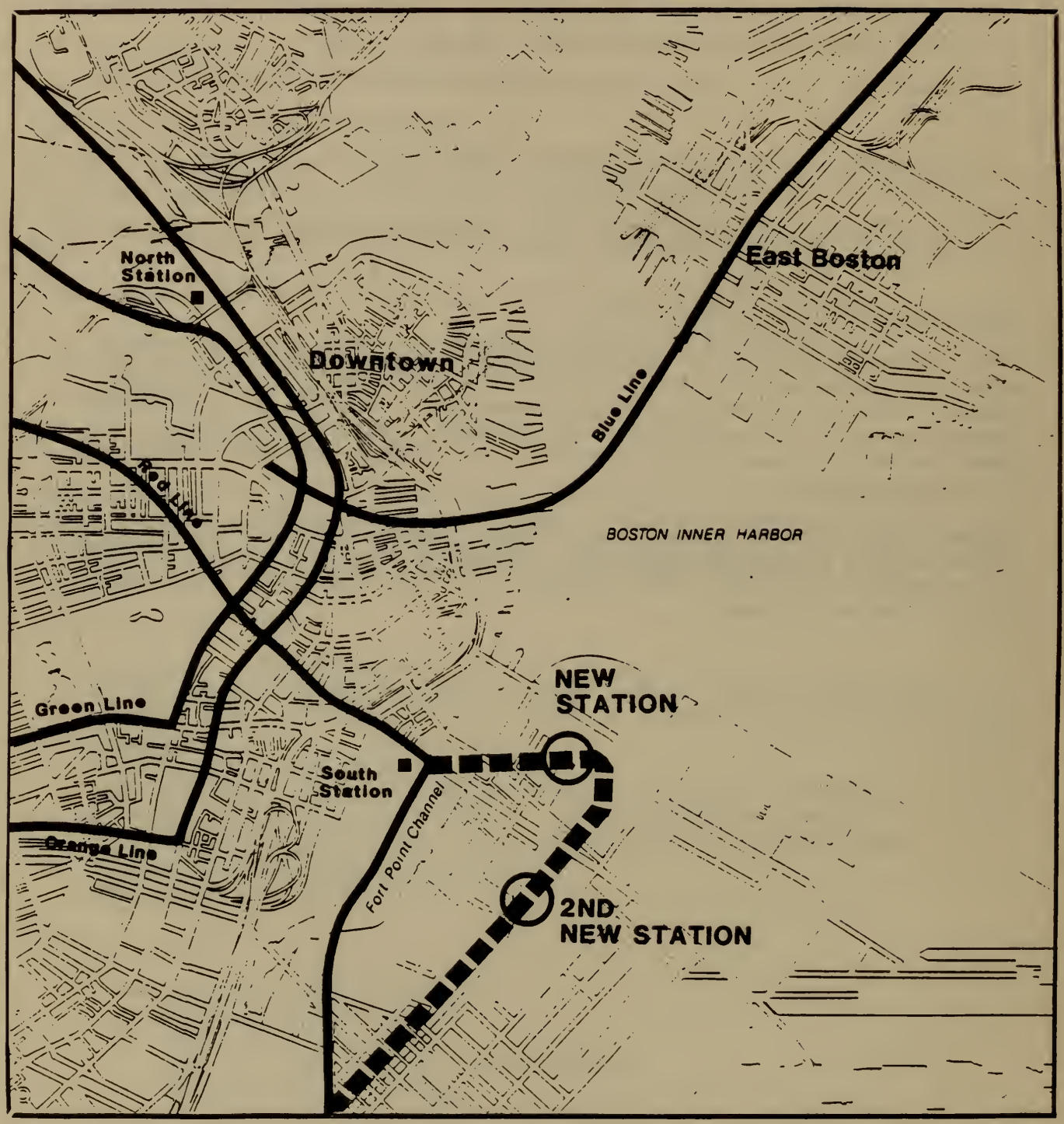
- o Introduction of pricing polices that encourage optimum use of spaces and ridesharing.

Alternative Modes of Transportation

The location of the Fan Pier/Pier 4 projects is ideal for certain alternative modes of transportation, particularly water transportation and pedestrian access. The city is encouraging the developers to explore the use of water transportation in connection with these projects. Water taxis and shuttles, commuter service, and private boats can play a role in providing access to this waterfront site.

Harborpark has recently joined the Freedom Trail as a prominent component of the waterfront pedestrian landscape. Pedestrian access to the sea will play an increasingly important role in Boston. The Fan Pier/Pier 4 developments will provide such access.

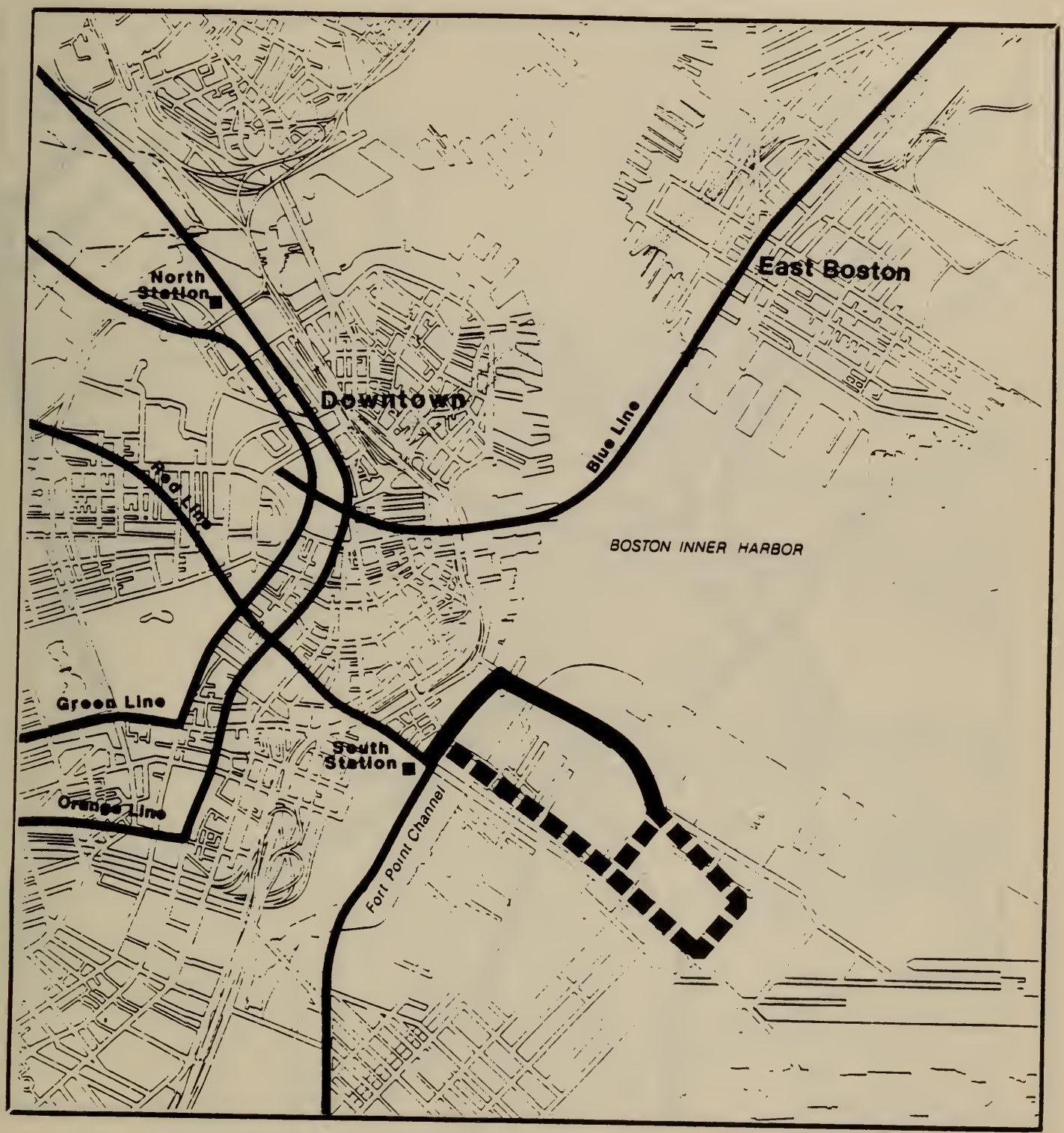
Fort Point Channel Red Line Loop Alternative



Proposed Red Line Loop
Existing MBTA Transit Lines

- 1 or 2 or 3 new stations
- Delays to Red Line users
- Rail rapid transit
- $100-200 million

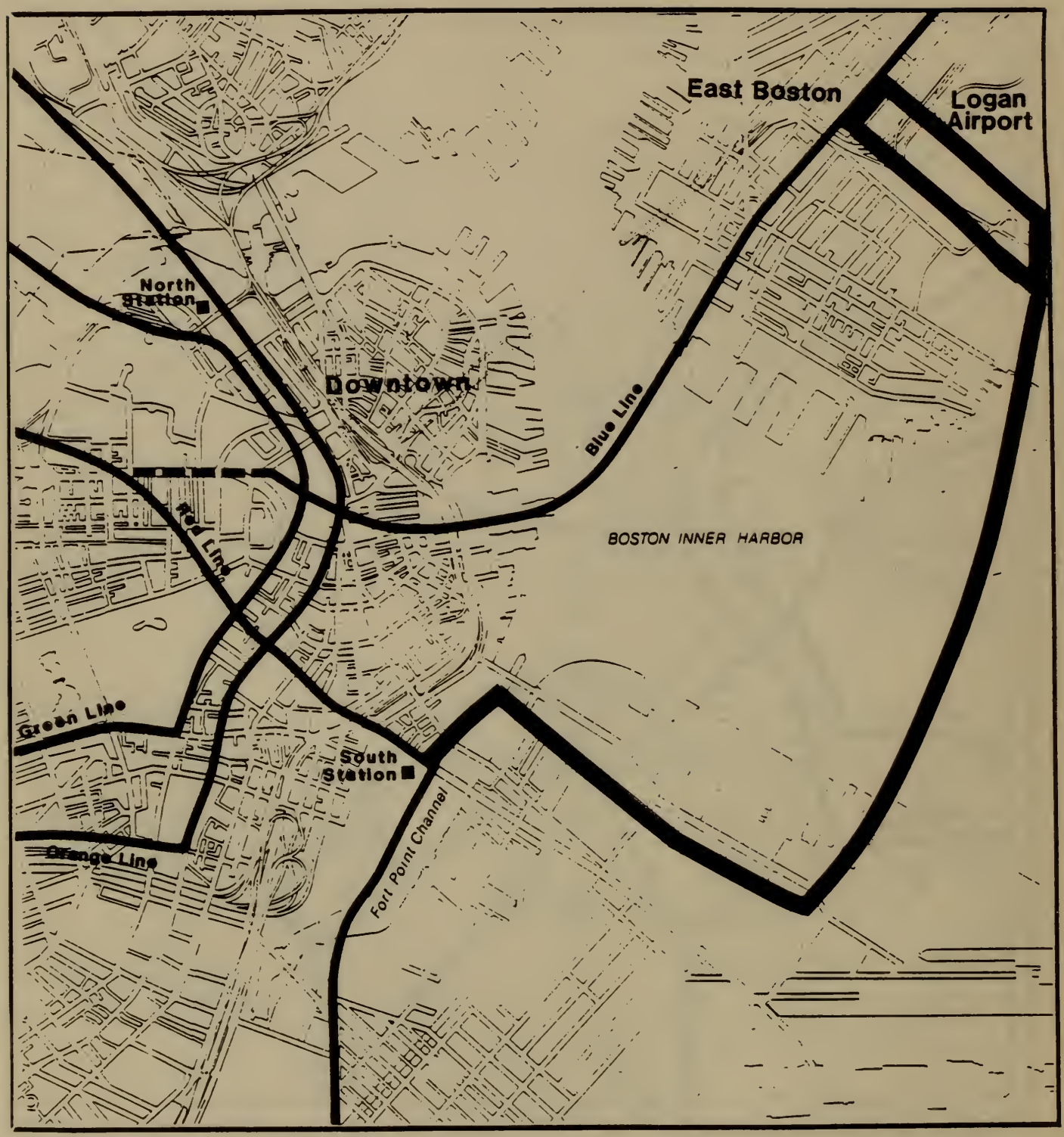
Fort Point Channel Shuttle/Loop Alternative



Initial Shuttle / Loop
Loop Extension
Existing MBTA Transit Lines

- Simple 0.9 mile shuttle can be built quickly, privately ($15-30 million)
- 2.2-mile loop can be extended in stages, one-way or two-way
- People mover

New Airport - Downtown Link



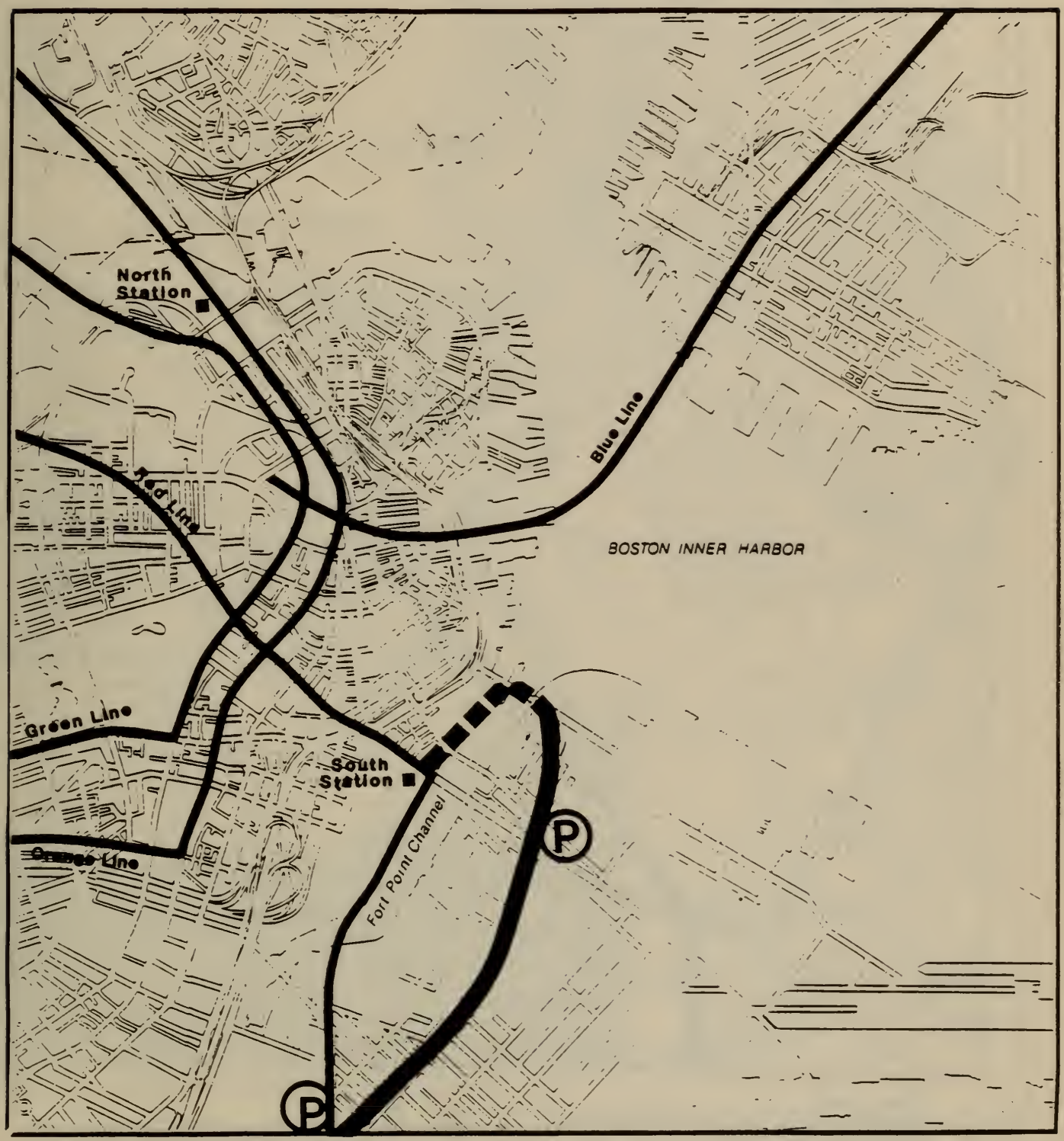
Existing MBTA Transit Lines

New Airport-Downtown Link

- Airport to South Station ($250-400 million)
- Rail or people mover

Proposed Blue Line Extension

Fort Point Channel Rail Cut/Parking Link Alternative



Rail Cut / Parking Link

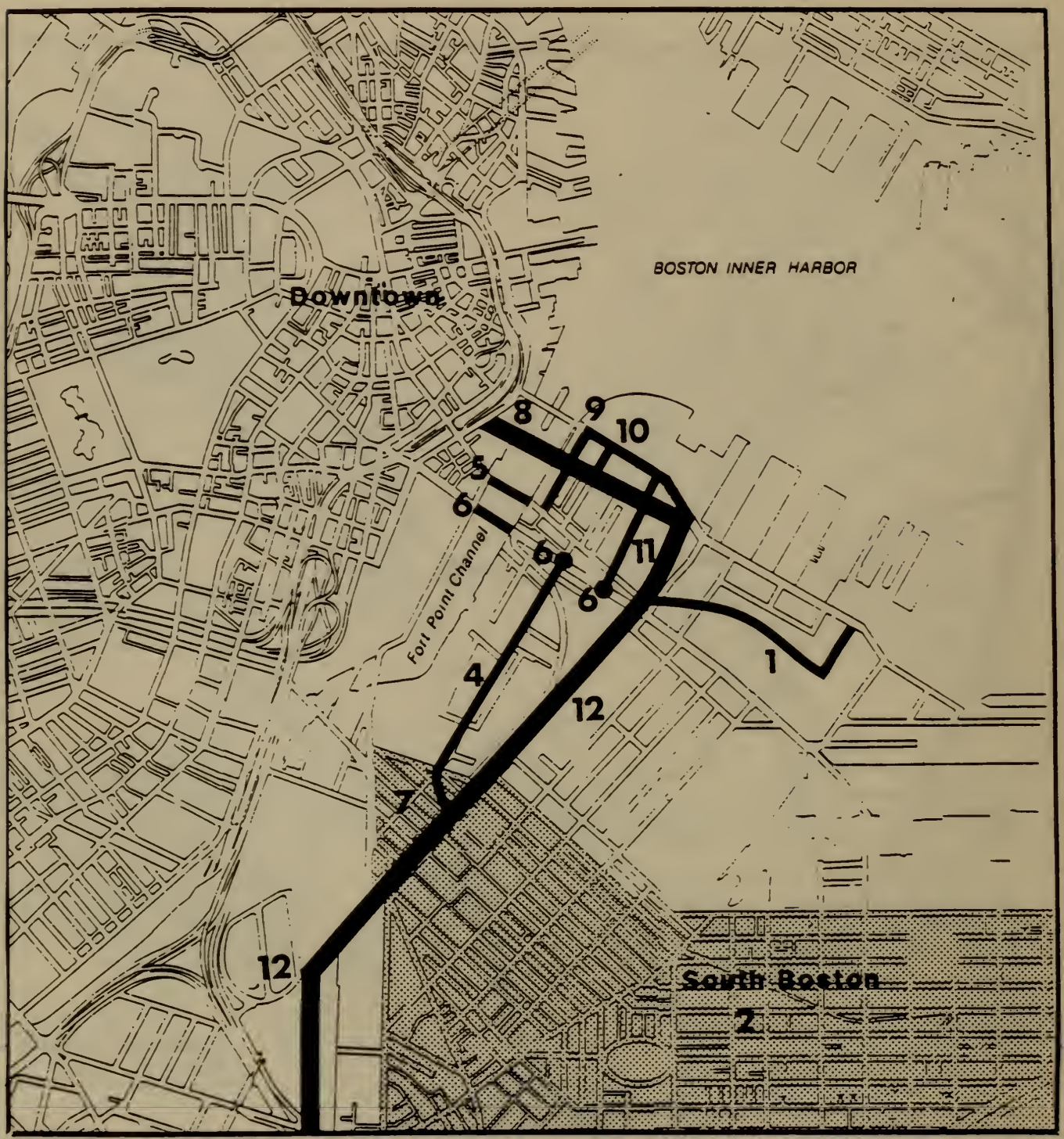
Possible inclusion of link to South Station

Existing MBTA Transit Lines

Remote parking near x-way ramps with easy transfer to a people mover

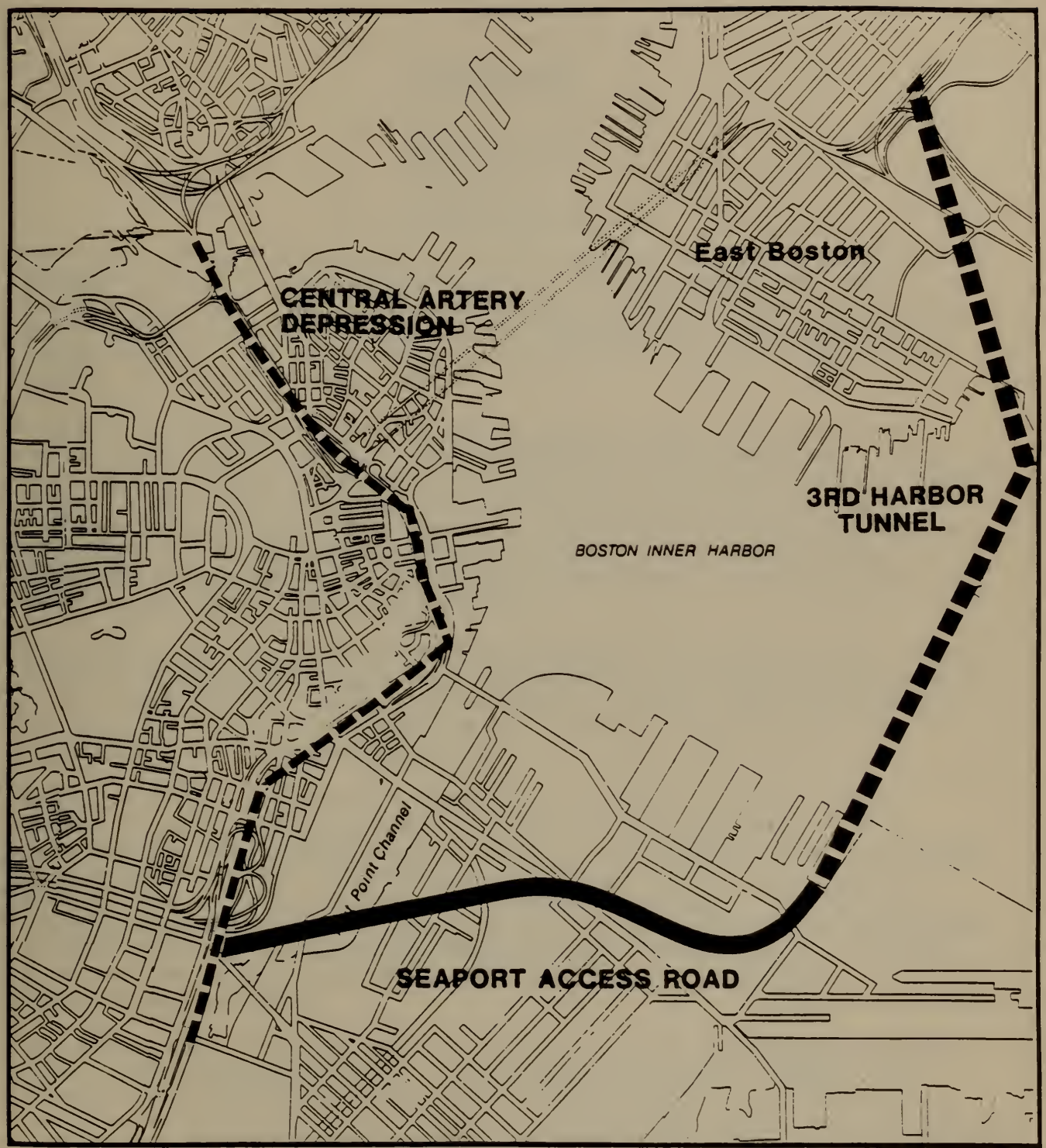
- Link cheaper remote parking to new developments (1.7 miles; $40-100 million)
- Extensions along Central Artery and/or Midlands
- People mover

South Boston Short Range Roadway Improvements



1. Haul Road
2. Neighborhood Traffic Improvements
3. New/upgraded signals
   - Harbor & Summer
   - "D" & West Seventh
   - Dorchester Ave. & Fr. Anthony Sonjin Way & Maj. O'Connor Way
   - "E" & West Third
   - East Eighth & L
   - L & Fifth Street
4. Repave "A" Street
5. Rehab/Reconstr. Congress Street Bridge
6. Rehab/Reconstr. Summer Street Bridge
7. Rehab/Reconstr. West 4th/5th/6th Street Bridges
8. New Northern Avenue Bridge
9. Relocated (new) Northern Avenue, Sleeper Street and Seaport Access Connector between new & old Northern Avenue
10. Connector Roads
    - Pittsburgh Street, Farnsworth Street, and old Northern Avenue
11. Seaport Access Connector Roads
12. South Boston By-pass

Long Range Roadway Proposals

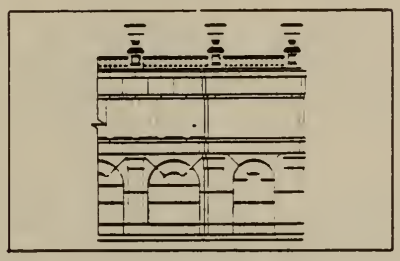


- Seaport Access Rd. (approx. .6 Bil.)
- Third Harbor Tunnel (approx. .7 Bil.)
- Central Artery Depression (1.3 B.)

Total Cost 2.6 B.

APPENDIX II

500 BOYLSTON STREET TRANSPORTATION IMPACT ASSESSMENT: A CASE STUDY



Scheduled to begin construction in the first quarter of 1986, the 500 Boylston Street Project is a multi-use office and retail development in the heart of Boston's Back Bay. Besides the John Hancock and Prudential Towers, 500 Boylston Street will be the largest office building built in the Back Bay in recent years. It will be the flagship headquarters and main office for New England Mutual Life Insurance Co.

The Boylston Street site includes the St. James Avenue Garage facility, owned by the city of Boston, which accommodates 625 automobiles. A major issue facing the city at the time the property was advertised for development was the replacement of valuable Back Bay public parking spaces, serving both commuters and Back Bay shoppers. The Request for Proposals that was advertised by the Boston Redevelopment Authority in November 1982, required developers interested in building on the garage site to incorporate 625 public spaces within their proposed plan.

With the consideration of New England Mutual Life Insurance Co. and Gerald D. Hines Interests as possible joint redevelopers of the site, and the balance of NEL-owned property along Boylston Street, in March 1983 the Authority convened a Civic Advisory Committee which included organizations and institutions from the surrounding area.

Over the last two years the Civic Advisory Committee has focused on a number of critical Back Bay transportation and parking issues. It has requested the Boston Redevelopment Authority to establish intensive planning to enhance traffic flow and parking availability in connection with the construction and operation of the 500 Boylston Street Project. The Boston Redevelopment Authority, on behalf of the city, has required the redevelopers to establish traffic and parking management plans to minimize environmental impact on the adjoining community and to address the Back Bay's transportation problems.

The Construction Mitigation Plan, as agreed to by the redevelopers and the Boston Redevelopment Authority, will minimize construction related truck impacts within the residential sector and minimize impacts from construction traffic on congested Back Bay streets during business hours. A novel approach established in this Plan was the securing of satellite parking areas for use of construction workers with free shuttle bus service to transport them from these locations to the project site.

A Traffic and Parking Management Plan, to extend for at least fifteen years following initial project occupancy, also establishes novel approaches to traffic management. It is highlighted by the redevelopers providing a computer-based ride sharing information bank in cooperation with the Back Bay business community including the dissemination of information concerning availability of car pool parking spaces and mass transit information. The redevelopers will also participate in the MBTA Commuter Pass Program, making available for sale MBTA Commuter Passes for subway and surface bus services to project tenants. Also included is the encouragement of tenants to establish plans for staggered work hours to reduce peak hour traffic impacts, and the use of the redevelopers' property management office to deal with transit, traffic and parking matters related to the traffic management plan.

The redevelopers, recognizing the role of the project within the fabric of the Back Bay street network and parking inventory, agreed to expend upwards of $100,000 to participate in traffic studies, implementation of short-term improvements, and selected measures to help traffic management in the Back Bay.

The cornerstone of the traffic mitigation efforts includes the detailed Parking Management Plan which sets forth the marketing of up to 1,270 parking spaces within the Project. This Plan assures that at least 625 spaces will be available for public use, with further assurances that 315 of these spaces will be reserved for short-term parkers using the Boylston Street commercial area. This Parking Management Plan will also provide additional conveniences for owners of vehicles of the neighborhoods surrounding the Project site displaying "residential parking stickers." In particular, such vehicles shall be allowed access to the Project parking facility during major snow emergencies to the extent spaces are available and, pursuant to a plan to be developed with input from the Authority and residential community representatives, shall be allowed to park on nights and weekends in the Project parking facility at special rates.

All plans referred to are attached to this document.

MEMORANDUM OF UNDERSTANDING

BETWEEN BOSTON REDEVELOPMENT AUTHORITY

and

NEW ENGLAND MUTUAL LIFE INSURANCE COMPANY/
GERALD D. HINES INTERESTS, INC., REDEVELOPERS
OF 500 BOYLSTON STREET IN THE BACK BAY

This Memorandum of Understanding entered into this 19th day of December, 1985, by and between the Boston Redevelopment Authority, a public body politic and corporate, duly organized and existing pursuant to Chapter 121B of the Massachusetts General Laws, having as its usual place of business in Boston, Massachusetts, hereinafter referred to as the "Authority", and New England Mutual Life Insurance Company, hereinafter referred to as "NEL", and Gerald D. Hines Interests, Inc., herein referred to as "GDHI".

WITNESSETH THAT:

WHEREAS, the Authority has authorized the Director of the Authority (the "Director") to execute a "Cooperation Agreement" with NEL/GDHI concerning the carrying out of the redevelopment of 500 Boylston Street in the Back Bay, consisting of a western component (the "Western Component") and an eastern component (the "Eastern Component") (together the "Project");

WHEREAS, the Authority Board has voted to authorize the Director to enter into a "Sale and Construction" Agreement with NEL/GDHI; and

WHEREAS, the Authority and NEL/GDHI desire to establish a plan to enhance traffic flow and parking availability in connection with construction and operation of the Project.

WHEREAS, the Authority on its own behalf and on behalf of the City of Boston intends to require all developers carrying out construction projects in the downtown and Back Bay areas of Boston to establish similar plans to uniformly minimize construction related impact on traffic flow in the City of Boston.

NOW, THEREFORE, the parties do hereto mutually agree as follows:

1. Construction Impacts

NEL/GDHI agrees to establish a "Construction Mitigation Plan" (the "Plan") which will commence on the date of issuance of a demolition permit for the Western Component of the Project and which will extend for sixty (60) months or until the occupancy of the Eastern Component of the Project, whichever is first to occur; provided, however, that the Plan shall not

apply to non-construction related activity associated with the Western Component following completion thereof. Such Plan is subject to the approval of the Director, and shall provide as follows:

- Reasonable efforts will be made to minimize construction related truck movement between 7:30 a.m. and 9:00 a.m. and between 4:00 p.m. and 6:00 p.m., except during the demolition, excavation and concrete placement phases of construction. At no time will trucks be permitted to be staged in such a manner as to impede the flow of traffic in the Project site area. NEL/GDHI will submit to the Authority prior to the commencement of construction a construction traffic and staging plan incorporating these provisions and requiring notice to the contractor, subcontractors and suppliers concerning the delivery and traffic flow requirements contained herein.

- All construction deliveries, except those associated with excavation and concrete placement, will be to Clarendon Street, Berkeley Street or St. James Avenue to ensure that normal shopping activity along Boylston Street will not be affected in any material manner.

- Structural steel deliveries arriving by rail to the Allston yards will be transferred to trucks that will exclusively use the Massachusetts Turnpike for arrivals and departures.

- NEL/GDHI in cooperation with the Authority will attempt to locate satellite parking locations for use by construction workers during the construction of the Western Component from which a free shuttle bus service to transport workers to the Project site will be provided.

2. Traffic Parking Impacts

NEL/GDHI further agrees to establish a "Traffic and Parking Management Plan" (the "Traffic Plan") which will commence six months prior to occupancy of the Western Component and extend for fifteen (15) years following occupancy of the Western Component. The Traffic Plan shall provide the following measures to reduce demand for parking at the Project and in the adjacent areas:

- NEL/GDHI will operate a computer-based ride-sharing information bank for the Back Bay business community. With the cooperation of adjacent businesses and building owners, NEL/GDHI will collect and disseminate information, in cooperation with Masspool, from and to commuters seeking to establish carpool arrangements. In connection therewith, NEL/GDHI will place promotional material for such programs, including information concerning availability of car pool parking spaces, in

company publications regarding mass transit and carpooling.

- NEL/GDHI will participate in the MBTA Commuter pass program through its property management office which will make available for sale MBTA commuter passes for subway and surface bus services to its employees and to tenants of the Project.

- NEL/GDHI agrees to encourage tenants of the Project to establish plans for staggered work hours or a "flex-time" system to reduce peak hour traffic impacts. NEL/GDHI's property management office will assist tenants interested in establishing such plans.

- NEL/GDHI agrees to maintain and provide the necessary staff through its property management office, to deal with transit, traffic and parking matters relating to the Traffic Plan and for monitoring access to the Project's parking facility.

- The property management office will also distribute information and promote the management program for all of the tenants in the Project.

3. Performance Monitoring

- During construction, the Director or his designee may request periodic meetings with NEL/GDHI representatives to review compliance procedures. If the Director reasonably determines that NEL/GDHI is not in compliance with the Authority approved "Construction Monitoring Plan" with respect to a Component, the Authority shall require NEL/GDHI to take such actions as are reasonably necessary to achieve full compliance with respect to such Component within thirty (30) days of such directive.

- It is recognized that the Authority may keep a record of compliance with respect to each Component on file. This information may be considered in deciding whether to award future development parcels (unrelated to the Project) to NEL/GDHI.

- NEL/GDHI shall send a progress report annually to the Authority including information regarding traffic, transit and parking characteristics of employees and visitors to each Component.

4. Traffic Operation and Control

- NEL/GDHI agrees to participate in traffic studies and implementation of short-term improvements and selected measures to help traffic management in the Back Bay including improved signage and to expend up to $75,000 towards this effort.

- The Authority on its own behalf and on behalf of the City of Boston agrees to take necessary steps to further improve management of traffic control and parking in the Project site area and the Back Bay generally.

5. Joint Venture Liability

- The Authority agrees that NEL/GDHI and its successors in interest shall be liable for breaches of obligations under this Agreement with respect to a particular Component only while NEL/GDHI or any successor in interest, as the case may be, is owner of the Component in question. The Authority further agrees to look solely to the interest in the Component in question of NEL/GDHI or its successors, as the case may be, for any claim against NEL/GDHI or any successor arising out of this Agreement in connection with such Component. Neither NEL/GDHI nor any trustee, beneficiary, partner, manager, agent or employee of NEL/GDHI (or its successors and assigns) shall ever be personally or individually liable; nor shall it or they ever be answerable or liable in any equitable proceeding or order beyond the extent of its or their interest in the Component in question.

IN WITNESS WHEREOF, the parties hereto have executed this Memorandum of Understanding as of the day and year first above written.

BOSTON REDEVELOPMENT AUTHORITY

Stephen Coyle, Director

Approved as to Legal Form:

General Counsel
for Boston Redevelopment Authority

NEW ENGLAND MUTUAL LIFE INSURANCE COMPANY
By: Copley Real Estate Advisors, Inc., Asset Manager and Advisor, hereunto duly authorized

By:
Name:
Title:

GERALD D. HINES, INTERESTS, INC.

By:
Name:
Title:

NEW ENGLAND MUTUAL LIFE INSURANCE COMPANY
c/o Copley Real Estate Advisors, Inc.
535 Boylston Street
Boston, Massachusetts 02116

and

GERALD D. HINES INTERESTS, INC.
462 Boylston Street, Suite 302
Boston, Massachusetts 02116

December 19, 1985

Boston Redevelopment Authority
Boston City Hall
One City Hall Square
Boston, Massachusetts 02201

Re: Parking Management Plan for proposed development to be located on premises bounded by Berkeley, Boylston and Clarendon Streets and St. James Avenue, Boston ("Project")

Gentlemen:

This letter sets forth the marketing plan for parking spaces in the Project to be instituted by the undersigned.

Parking for approximately 673 vehicles will be provided in the western component of the Project (the "Western Component"). Of the 673 spaces to be located in the Western Component, 300 will be designated for short-term public use, 25 will be designated for public use on a monthly basis ("Public Monthly Spaces"), and 348 will be designated for tenants of the Project. Of the 25 Public Monthly Spaces, 20 will be reserved for high-occupancy vehicles such as car pool vans ("Car Pool Spaces"). The Car Pool Spaces will be placed in convenient locations in the parking facility and will be made available at monthly rates not to exceed the lowest monthly parking rate then available at the Western Component.

If the eastern component of the Project (the "Eastern Component") is constructed in accordance with the design contemplated by the Sale and Construction Agreement between the City of Boston, the Boston Redevelopment Authority (the "BRA"), New England Mutual Life Insurance Company and Gerald D. Hines

Interests, Inc. (together, the "Developer") dated as of June 30, 1984 (the "Sale and Construction Agreement"), the Eastern Component will provide parking for approximately 597 vehicles. Of those 597 spaces, 15 will be designated for short-term public use, 285 will be designated as Public Monthly Spaces, and 297 will be designated for tenants of the Project. Of the 285 Public Monthly Spaces, 20 will be designated Car Pool Spaces.

If construction of the Eastern Component is not commenced in accordance with the Sale and Construction Agreement, until such commencement of construction, the Developer agrees to provide an outdoor surface level parking facility including approximately 125 public parking spaces on the Eastern Component site. The ratio of Public Monthly and Car Pool Spaces to short-term spaces, will be mutually agreed upon by the BRA and the Developer.

Although this letter agreement anticipates the provision of a total of 1270 parking spaces if and when both the Western Component and Eastern Component parking facilities are completed, the Planned Development Area Plan (the "PDA") for the Project currently permits a total of only 1000 parking spaces. In the event the PDA is not successfully amended to allow for an additional 270 spaces, the allocation of spaces will be revised as follows. Parking for approximately 600 vehicles will be provided in the Western Component, with the total number of spaces designated for public uses to remain unchanged and the total number of spaces designated for tenants of the Project to be reduced by 73 spaces to a total of 275 spaces. Parking for approximately 400 vehicles will be provided in the Eastern Component, with the total number of spaces designated for public uses to remain unchanged and the total number of spaces designated for tenants of the Project to be reduced by 197 spaces to a total of 100 spaces.

In both the Western Component and the Eastern Component, parking will be provided on three levels located below grade. During construction of the Western Component, no fewer than 75 public spaces for short-term hourly or daily use will be provided on the site of or within three blocks of the Project.

In order to market the Public Monthly Spaces to the public, the undersigned intend to undertake reasonable public advertising of the availability of such spaces and, prior to the opening of the parking facility in the Western Component and the Eastern Component, to place an appropriate exterior sign on the applicable component site indicating the availability of such spaces. After the opening of the parking facility in the Western Component, a sign shall be maintained within the parking facility indicating the availability of monthly parking spaces in the Project. Public Monthly Spaces will be allocated based upon a "lottery style"

allocation system no less than 3 months after the opening of the parking facility in the Western Component and the Eastern Component. Rates for the Public Monthly Spaces will be equal to that charged to tenants of the Project for the parking spaces designated for their use as such rates may be adjusted.

In the event all public monthly parking spaces are rented, the undersigned intends to keep a waiting list of parties desiring Public Monthly Spaces. As the Spaces become available, they will be offered to parties on the waiting list.

Approximately one year after the completion of the Eastern Component, the Developer and the BRA agree to discuss utilization of the parking facilities.

Every three years the utilization of all public parking spaces will be reviewed. If spaces designated for short-term hours or daily use have not been utilized during periods of the year of the most intensive parking use or Public Monthly Spaces have not been utilized on a reasonably regular basis during the preceding three-year period, an appropriate number of such spaces will be converted to tenant use with your approval, which approval is not to be unreasonably withheld or delayed.

When the Western Component parking facility is completed and in operation, a short-term parking program will be initiated, which will require that at least 100 of the public short-term spaces remain unoccupied during normal business days until 9:30 a.m. The completion of the Eastern Component parking facility shall in no event require an increase in the number of spaces that must remain unoccupied. It is agreed and understood that the purpose of this provision is not to keep spaces unnecessarily vacant, but rather to improve service to users of the Project parking facility.

The Project parking facility will also provide additional conveniences for owners of vehicles of the neighborhoods surrounding the Project site displaying "residential parking stickers." In particular, such vehicles shall be allowed access to the Project parking facility during major snow emergencies to the extent spaces are available and, pursuant to a plan to be developed with input from the BRA and residential community representatives, shall be allowed to park on nights and weekends in the Project parking facility, during the facility's standard hours of operation, at special rates.

Upon completion of both the Western Component and the Eastern Component, the facility shall be treated as a single parking facility for purposes of allocation of spaces between public and tenant uses. The total number of spaces allocated to each use, however, shall continue in accordance with this letter agreement.

Kindly acknowledge your approval of the foregoing by signing and returning the enclosed copy of this letter.

Very truly yours,

NEW ENGLAND MUTUAL LIFE INSURANCE COMPANY

By: Copley Real Estate Advisors, Inc.
Asset Manager and Advisor,
hereunto duly authorized

By: _____

GERALD D. HINES INTERESTS, INC.

By: _____

Consented to this 17th day
of December, 1985

BOSTON REDEVELOPMENT AUTHORITY

By: _____
Stephen F. Coyle, Director

ACKNOWLEDGEMENTS

The contribution of the Boston Redevelopment Authority, its Director Stephen Coyle, and the following staff members of the Authority and the Transportation Department is gratefully acknowledged.

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